ORDER NO. AD9603075C2

Service Manual

CD Player

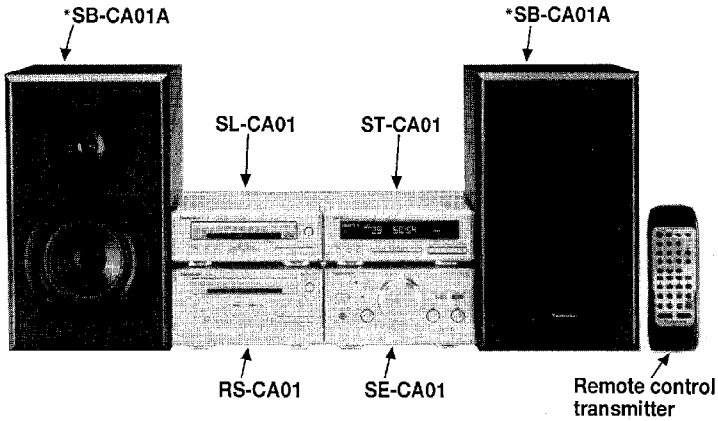
Compact Disc Player

SL-CA01

COMPACT disc DIGITAL AUDIO

DIGITAL

MASH※ multi-stage noise shaping



Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

Colour

(N)...Gold Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(N)

System: SC-CA01

RAE0150Z MECHANISM SERIES

■SPECIFICATIONS

■Audio

DA converter 1 bit 2 DAC MASH※

■Pickup

Wavelength 780 nm

■General

Dimensions (W×H×D) 186×67×228 mm

Weight 1.3 kg

Notes:

1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

※ MASH is a trademark of NTT.

System	Tuner	CD Player	Amplifier	Cassette deck	Speakers
SC-CA01	ST-CA01	**SL-CA01**	SE-CA01	RS-CA01	*SB-CA01A

*Made in PAES

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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CONTENTS

	Page
PRECAUTION OF LASER DIODE	2
LOCATION OF CONTROL	3
HANDLING PRECAUTIONS FOR TRAVERSE DECK	3
OPERATION CHECK AND MAIN COMPONENT REPLACEMENT PROCEDURES	4~10
REPLACEMENT OF THE FOOT	10
ERROR CODE DISPLAY AND SERVO ADJUSTMENT FUNCTION	11, 12
MEASUREMENTS AND ADJUSTMENTS	13
BLOCK DIAGRAM	14~16
SCHEMATIC DIAGRAM	17~21
PRINTED CIRCUIT BOARD DIAGRAM	22, 23
WIRING CONNECTION DIAGRAM	24
TERMINAL GUIDE	25~28
RESISTORS AND CAPACITORS	29
REPLACEMENT PARTS LIST	30, 33, 34
CABINET PARTS LOCATION	31
LOADING MECHANISM PARTS	32

NOTE:
Refer to the service manual for Model No. SE-CA01 (ORDER No. AD9603074C2) for information on "ACCESSORIES", "INSTALLATION ", "CONNECTIONS" and "PACKAGING".

PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.
Wave length: 780 nm
Maximum output radiation power from pickup: 100 µW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

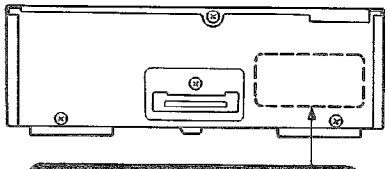
1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

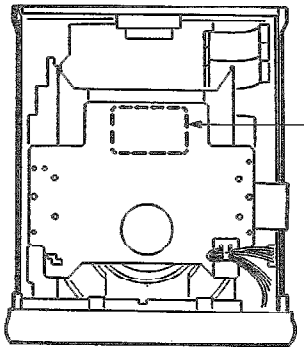
Wellenlänge: 780 nm
Maximale Strahlungsleistung der Lasereinheit: 100 µW/VDE

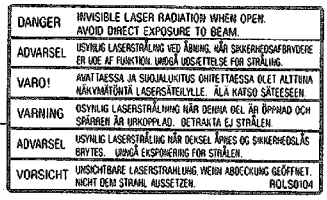
Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.



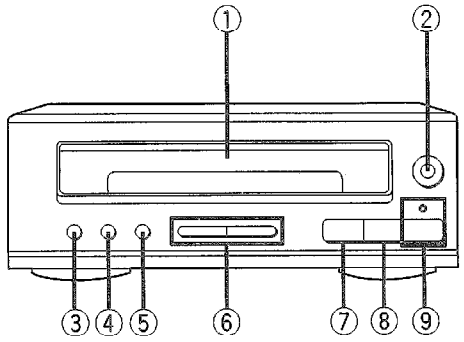
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT




DANGER
INVISIBLE LASER RADIATION WHEN OPEN.
AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT
UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
ROLSD104

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

LOCATION OF CONTROL



CD player section

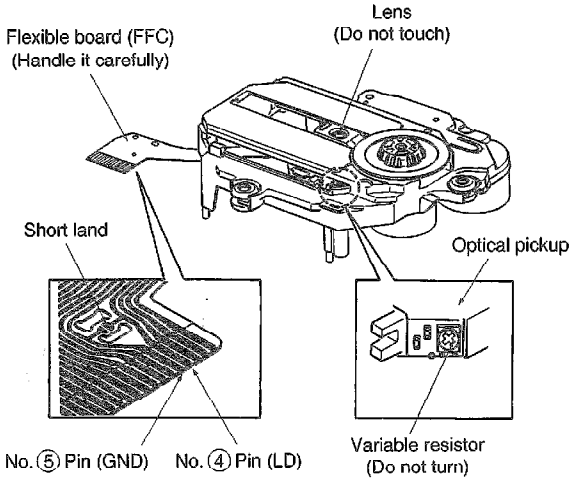
① Disc tray
② Disc tray open/close button (▲ OPEN/CLOSE)
③ Random play button (RANDOM)
④ Repeat button (REPEAT)
⑤ AI edit button (AI EDIT)
⑥ Skip/search buttons
(SKIP/SEARCH ⏮ / ◀◀ , ▶▶ / ⏭)
⑦ Stop button (■)
⑧ Pause button (⏸)
⑨ Play button and indicator (▶)

HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. The short land between the No. ④ (LD) and No. ⑤ (GND) pins on the flexible board is shorted with a solder build-up to prevent damage to the laser diode.
   To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

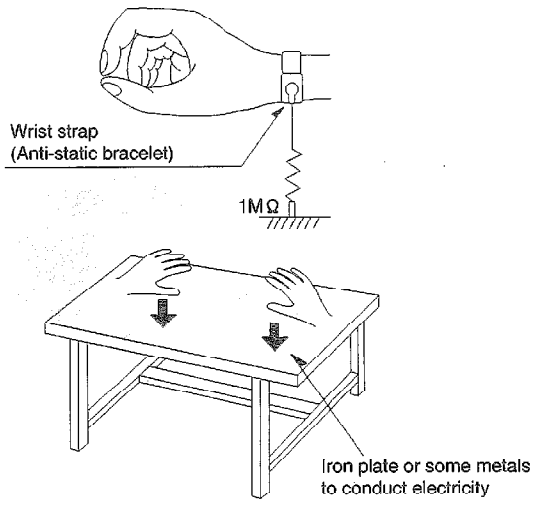


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).



OPERATION CHECK AND MAIN COMPONENT REPLACEMENT PROCEDURES

NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Illustrated screws are equivalent to actual size.
5. Refer the parts No. on the page of "Main component Replacement Procedures", if necessary.

• Contents

• Checking Procedures for each P.C.B. Page.

1.Checking for the power supply P.C.B. and main P.C.B.. ..... 4,5.

2.Checking for the servo P.C.B.. ..... 5.

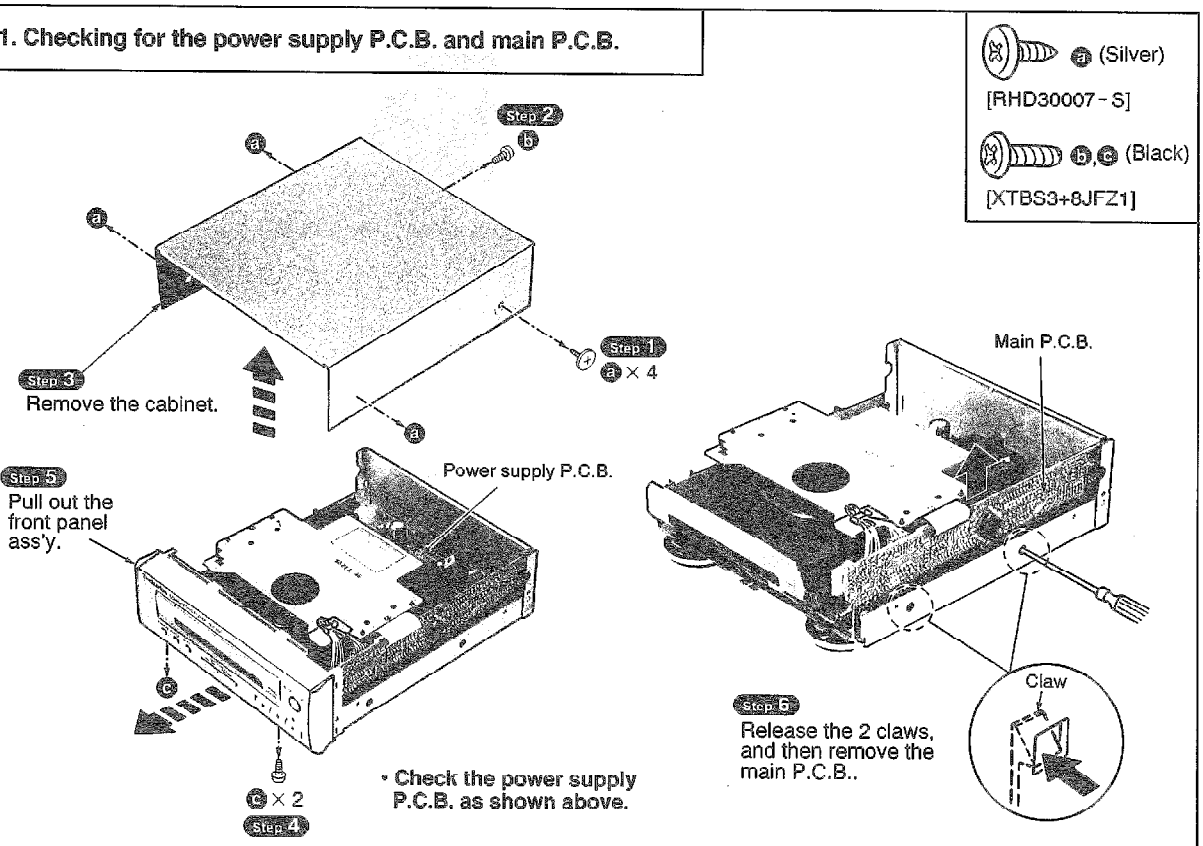
• Main Component Replacement Procedures

1. Replacement for the traverse deck ass'y. ..... 6-9.

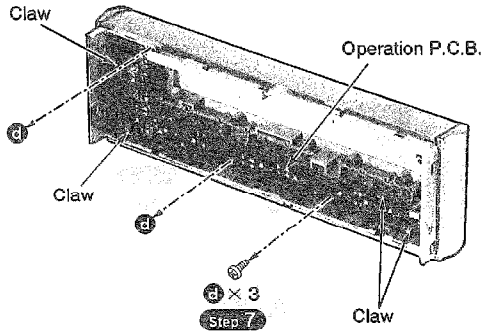
2. Replacement for the belt, loading motor ass'y and loading switch. ..... 10.

Checking Procedure for each P.C.B.

1. Checking for the power supply P.C.B. and main P.C.B.

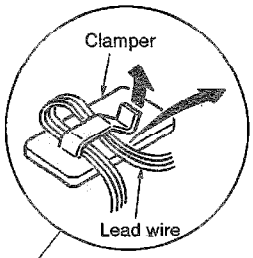


Step 8
Release the 4 claws, and then remove the operation P.C.B..

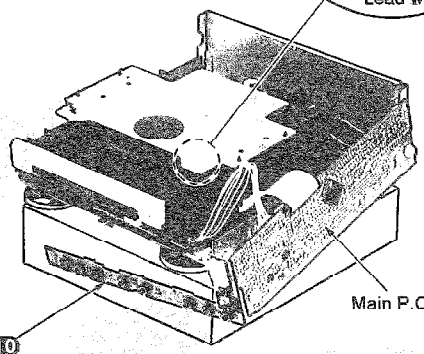


[XTBS26+8J]

Step 9
Remove the lead wire from the clamper.



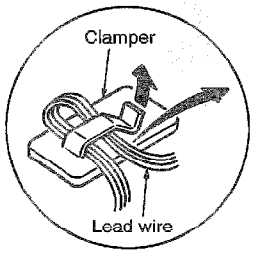
• **Check the main P.C.B. as shown below.**



Step 10
Reinstall the operation P.C.B. to the main P.C.B..

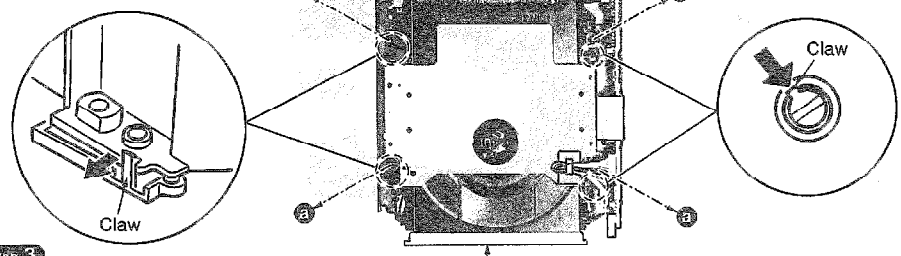
2. Checking for the servo P.C.B.

• Follow the item 1 (Step 1 ~ Step 5) in checking procedures for each P.C.B. on page 4.



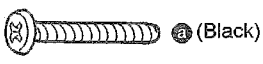
Step 2
Remove the lead wire from the clamper.

Step 1
a × 4

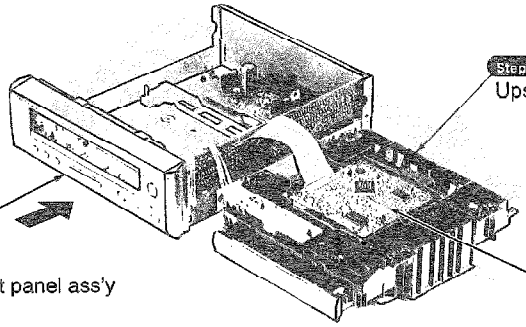


Step 3
Release the 4 claws, and then remove the loading unit.

Loading unit.


a (Black)
[XTB3+18JFZ]

• **Check the servo P.C.B. as shown below.**

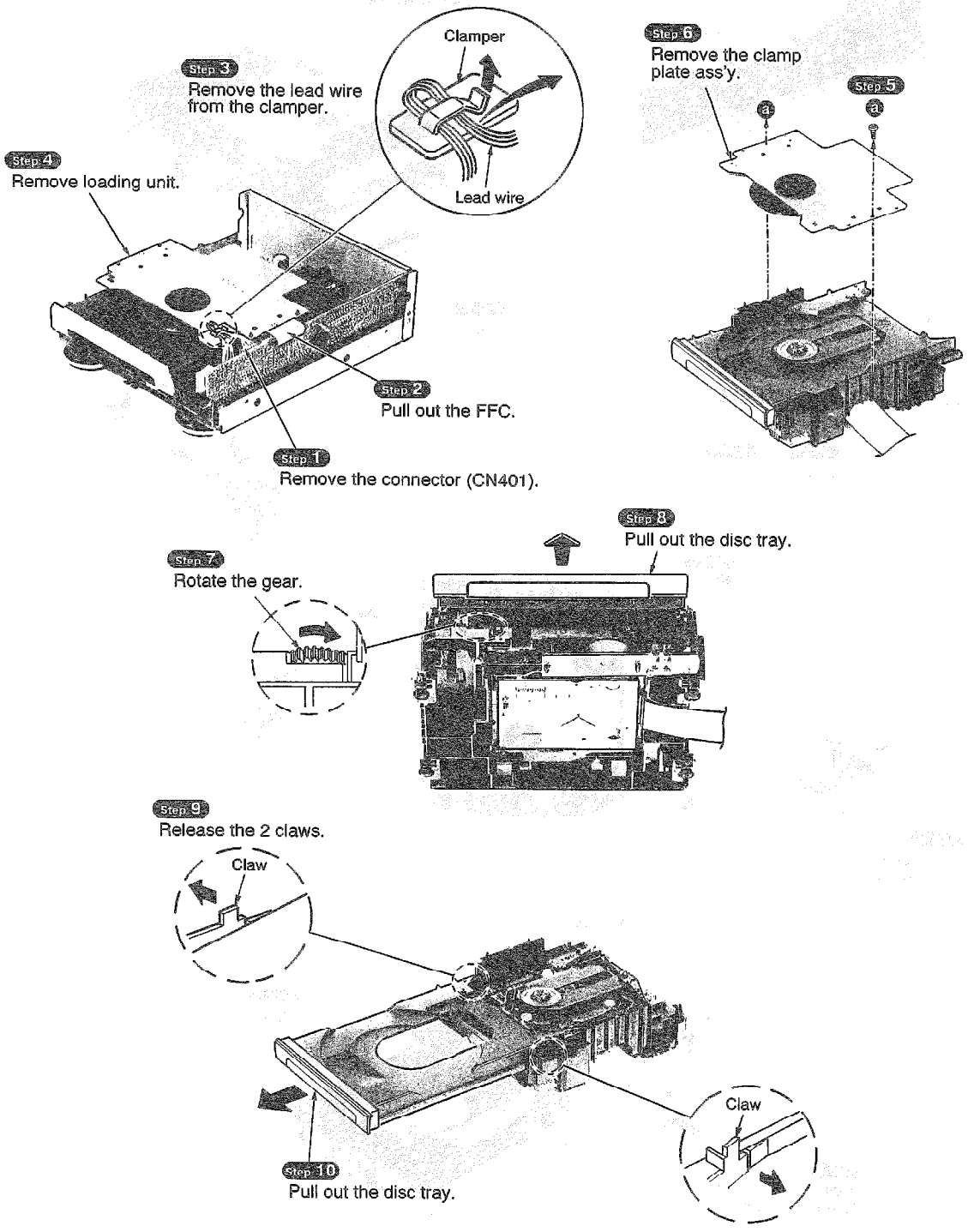


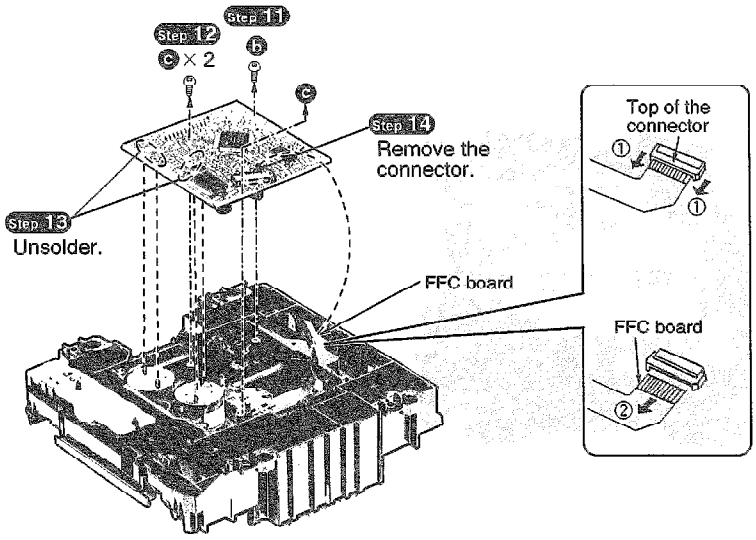
Main Component Replacement Procedures

1. Replacement for the taverse deck ass'y

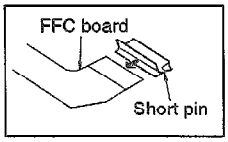
[XTN26+6G]

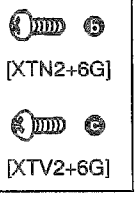
- Follow the item 1 (Step 1 ~ Step 3) in checking procedures for each P.C.B. on page 4.
- Follow the item 2 (Step 1 ~ Step 3) in checking procedures for each P.C.B. on page 5.

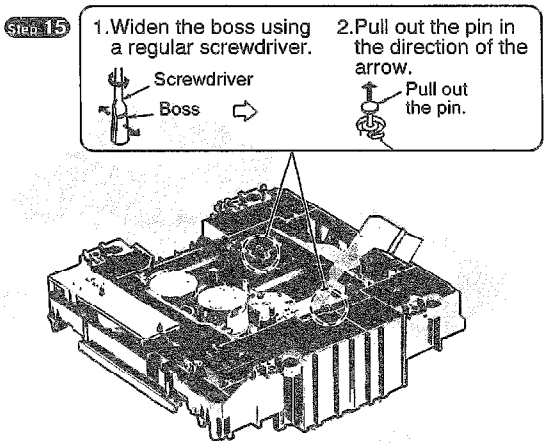


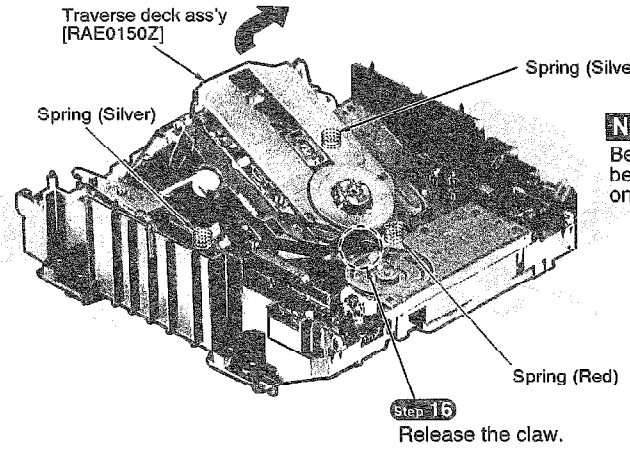


Caution:
Insert a short pin into the traverse unit FFC board.
(Refer to "Handling Precautions for Traverse Deck" on page 3.)



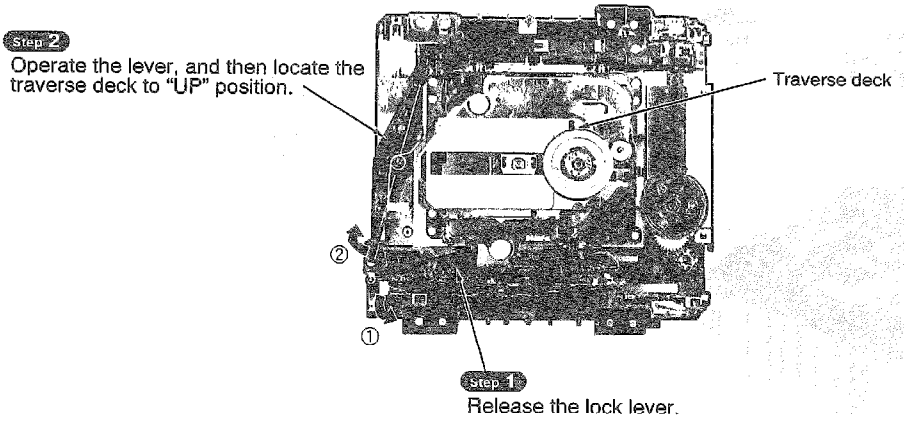


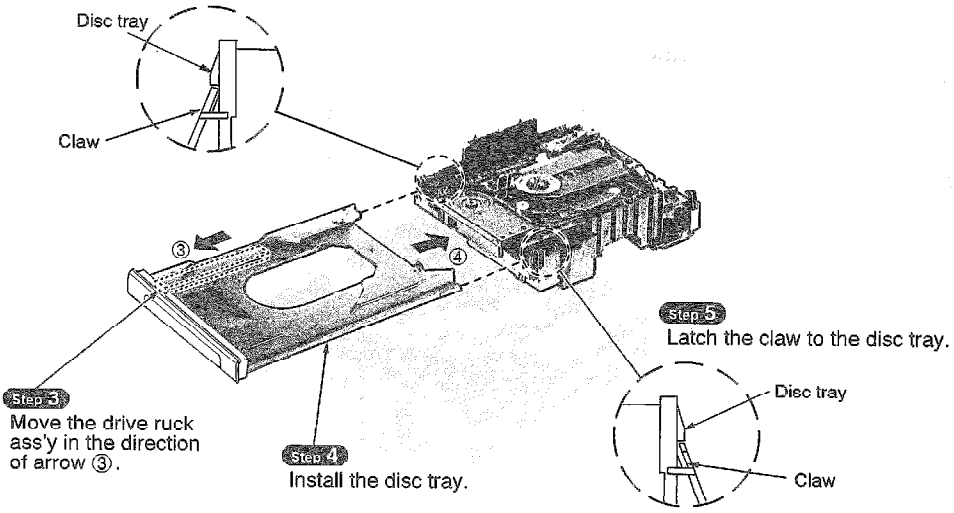

Step 15
1.Widen the boss using a regular screwdriver.
Screwdriver
Boss
2.Pull out the pin in the direction of the arrow.
Pull out the pin.

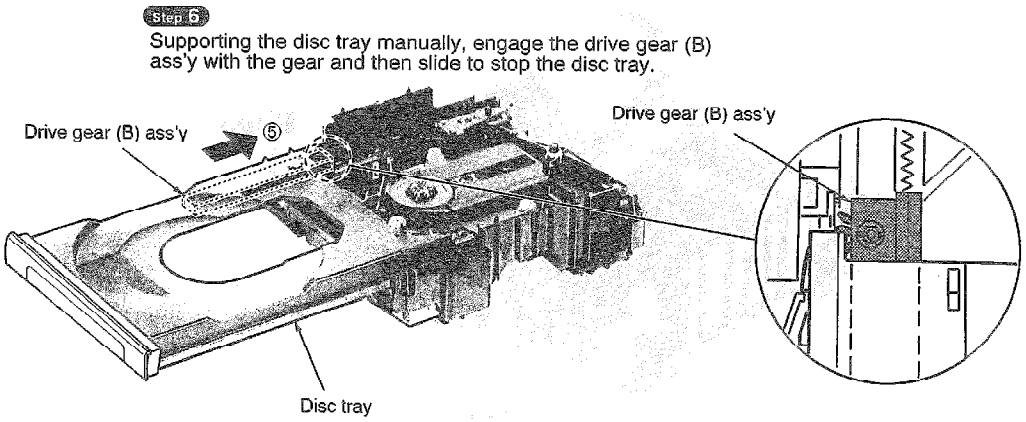


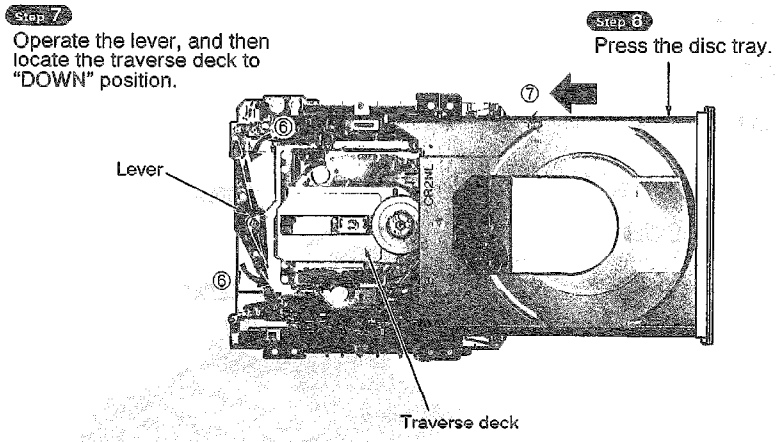
NOTE
Be careful not to lose the 3 springs because those will also be removed on removal of the traverse deck ass'y.

Installation of the disc tray after replacement

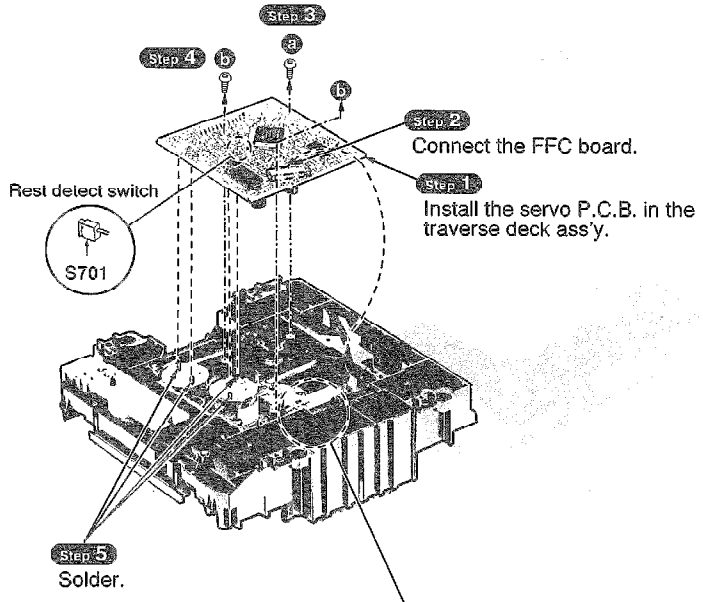





Step 6
Supporting the disc tray manually, engage the drive gear (B) ass'y with the gear and then slide to stop the disc tray.
Drive gear (B) ass'y
⑤
Drive gear (B) ass'y
Disc tray



Installation of the servo P.C.B. after replacement

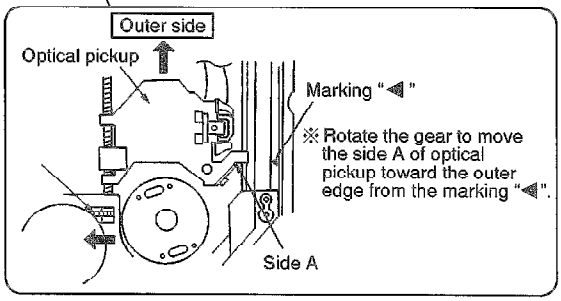


ⓐ [XTN2+6G]

ⓑ [XTV2+6G]

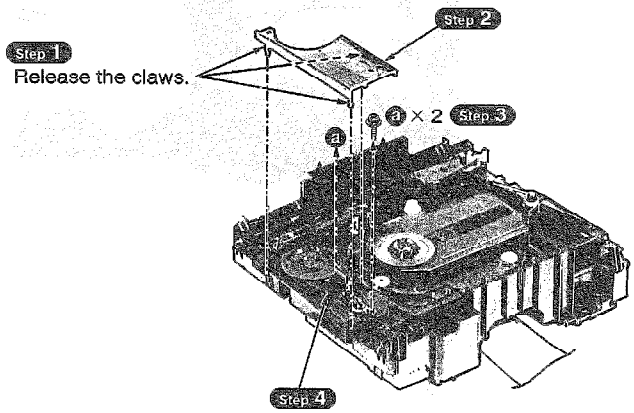
NOTE

Before installing the servo P.C.B., move the optical pickup toward the outer edge from the mark "▼". [Otherwise, the rest detect switch (S701)mounted on the servo P.C.B. may be damaged.]

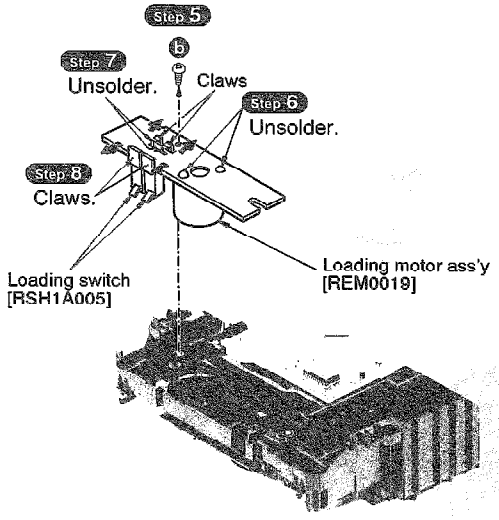

Outer side
Optical pickup
Marking "◀"
※ Rotate the gear to move the side A of optical pickup toward the outer edge from the marking "◀".
Side A

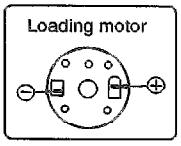
2. Replacement for the belt, loading motor ass'y and loading switch

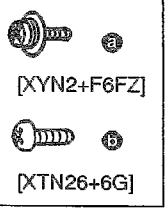
- Follow the item 1 (Step 1 ~ Step 5) in checking procedures for each P.C.B. on page 4.
- Follow the item 2 (Step 1 ~ Step 3) in checking procedures for each P.C.B. on page 5.
- Follow the item 1 (Step 1 ~ Step 10) in main component procedures on page 6.



Remove the belt [RMG0158].

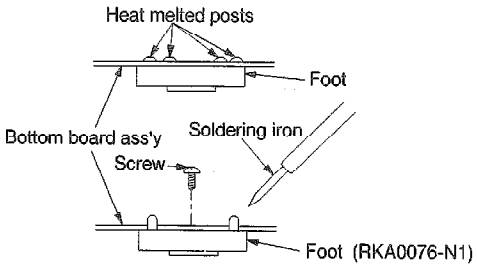






■ REPLACEMENT OF THE FOOT

1. Remove the 4 heat melted posts on the Bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0076-N1) on the Bottom board ass'y melt the 4 posts with a soldering iron or install it with a screw (XTB3+6J).



ERROR CODE DISPLAY AND SERVO ADJUSTMENT FUNCTION

This unit has an error code display function, so that if the unit operates incorrectly, the fault is displayed using an error code on the FL display of the tuner (ST-CA01). It also has a servo adjustment function for displaying the status of servo system functions (focus, tracking, CLV) on the tuner's FL display.
The system control IC and FL display are part of the tuner so make sure the system has been connected properly before using these functions. (This unit can be operated independently, although the error code display and servo adjustment functions cannot be used.)
Use these two functions for guidance during fault diagnosis and repair.

Note: Check beforehand for scratching or soiling of the test disc (SZZP1054C), and soiling or other problems with the optical pickup lens.

● Error code display procedure

Automatic adjustment results

Turn the power ON.

↓

Load the test disc (SZZP1054C).

↓

Hold down the REPEAT button for at least 2 seconds, and then press the STOP button for at least 2 seconds while continuing to hold down the REPEAT button.

↓

A servo section error code is displayed. (See Table 2.)
Use this error code display as a guideline for finding the malfunction point in the servo circuitry. If the error code "E-00" is displayed, the unit is "OK (No problem)."

Checking the mechanism switches

Press the F. SKIP button.

↓

A mechanism OK/NG error code is displayed. (See Table 1.)
This error code can be used to diagnose whether or not the mechanism is OK. If there are multiple errors, these can be displayed successively by pressing the F. SKIP button.

↓

Remove the disc and turn the power OFF. (The error code display mode is canceled.)

● Servo adjustment procedure

Turn the power ON.

↓

Load the test disc (SZZP1054C)

↓

Hold down the REPEAT button for at least 2 seconds, and then press the STOP button for at least 2 seconds while continuing to hold down the REPEAT button.

↓

Press the ▷ (PLAY) button, and play for 10 seconds

↓

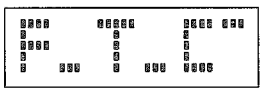
Servo adjustment results are displayed

Focus Tracking CLV servo

↓

Remove the disc and turn the power OFF.

(Example)



= Normal

	"L" level	"H" level
Focus	Focus system normal	Focus system defective
Tracking	Tracking system normal	Tracking system defective
CLV servo	CLV servo system defective	CLV servo system normal

● Table 1

FL display	Symptom	Cause
H - 15	When CD tray opens, it closes by itself.	Disc tray "Open" detection switch (S791) fault.
H - 16	When CD tray closes, it opens by itself	Disc tray "Closed" detection switch (S790) fault.
F - 15	Does not play, even when CD play button is pressed.	Pickup rest position detection switch (S701) fault.
F - 26	Does not move even when "▷ " (PLAY) is pressed.	System control or servo processor IC (IC401, 702) fault.

● Table 2

※ The unit is satisfactory if the error code is **E - 00** of **E - 02**
※ Before testing, check that the test disc is free of scratches and optical pickup is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Signal name	Location	PLAY	STOP
E - 01	Focus and tracking offset adjustments not completed in the specified time period.	1. Clocks X1 and X2, power supply VDD and reset/RST, all on IC702. 2. MDATA, MCLK, MLD and SENSE signal to/from mechanism controller.	MDATA	IC702 ⑧ pin	PLAY 5V 0V T=13.6ms.	0V
			MCLK	IC702 ⑦ pin	PLAY 5V 0V T=13.6ms.	4.8V
			MLD	IC702 ⑨ pin		4.9V
			SENSE	IC702 ⑩ pin	0V	0V
			/RST	IC702 ⑱ pin	4.9V	4.9V
			X1	IC702 ⑱ pin	1.9Vp-p F = 16.9344MHz	1.9Vp-p F = 16.9344MHz
			X2	IC702 ⑲ pin	5.6Vp-p F = 16.9344MHz	5.6Vp-p F = 16.9344MHz
E - 02 E - 03 E - 05 E - 07 E - 09 E - 0B E - 0D E - 0F	Disc play unstable.	1. Scratches or contaminants on disc surface. 2. Focus and tracking servo circuits (check waveforms, voltages, and part values.) 3. Spindle driver circuit. 4. Optical pickup.	FE	IC702 ㉜ pin	PLAY 0.3V p-p 2ms. 0.1V/DIV.	2.5V
			TE	IC702 ㉝ pin	PLAY 0.4V p-p 2ms. 0.2V/DIV.	2.5V
			FOD	IC702 ㉘ pin	2.5V	2.5V
			TRD	IC702 ㉗ pin	2.5V	2.5V
			KICK	IC702 ㉖ pin	2.5V	2.5V
			/FLOCK	IC702 ⑪ pin	0V	4.9V
			/RF DET	IC702 ㊳ pin	0V	4.9V
			RF	TJ701	PLAY 1.2Vp-p 0.5 μs. 0.2V/DIV.	3.4V
			STAT	IC702 ⑰ pin	4.9V	0V
E - 04 E - 06 E - 0C E - 0E	Best "Eye" (PD Balance) adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	FBAL	IC702 ㉚ pin	2.5 ±1.25V	2.5 ±1.25V
			RF	TJ701	PLAY 1.2Vp-p 0.5 μs. 0.2V/DIV.	3.4V
			FE	IC702 ㉜ pin	PLAY 0.3V p-p 2ms. 0.1V/DIV.	2.5V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V
E - 08 E - 0A	Focus or Tracking gain adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	FE	IC702 ㉜ pin	PLAY 0.3V p-p 2ms. 0.1V/DIV.	2.5V
			TE	IC702 ㉝ pin	PLAY 0.4V p-p 2ms. 0.1V/DIV.	2.5V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V

MEASUREMENTS AND ADJUSTMENTS

Cautions:

- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens.
- Avoid exposure to the laser beam, especially when performing adjustments.

This unit SL-CA01 is designed to operate on power supplied from the Amplifier SE-CA01 through the Tuner ST-CA01.
When connecting the unit to other system components, do not connect to the Amplifier SE-CA01 directly. Be sure to connect this unit through the Tuner ST-CA01.
When operating the unit SL-CA01 alone for testing and servicing, without having power supplied from the Amplifier SE-CA01 and the Tuner ST-CA01, use the following method.

Power Supply to This Unit alone

- Apply 11V AC power to the section between AC IN of the coil (L401) and the jumper (J31) GND as well as the section between AC IN of the coil (L402) and the jumper (J31) GND. **(Shown in Fig. 1)**

Operating the Unit Alone

When this unit is operated alone without system connection to other units, the switches on the front panel remain inoperative. To operate the switches, follow the procedure below.

- To play, short-circuit the points between the R431 and the jumper (J101).
- To F. SKIP, short-circuit the points between the R432 and the jumper (J101).
- To OPEN/CLOSE of disc tray, short-circuit the points between the R433 and the jumper (J101).
- To R. SKIP short-circuit the points between the R434 and the jumper (J101).

To Check Signals

Connect the oscilloscope or the speaker with built-in amplifier to the section between LINE OUT (Lch) of the resistor R455 and the GND point of the jumper (J31) as well as the section between LINE OUT (R ch) of the resistor R456 and the GND point of the jumper (J31) and check if the signals are outputting from this unit. **(Shown in Fig. 1)**

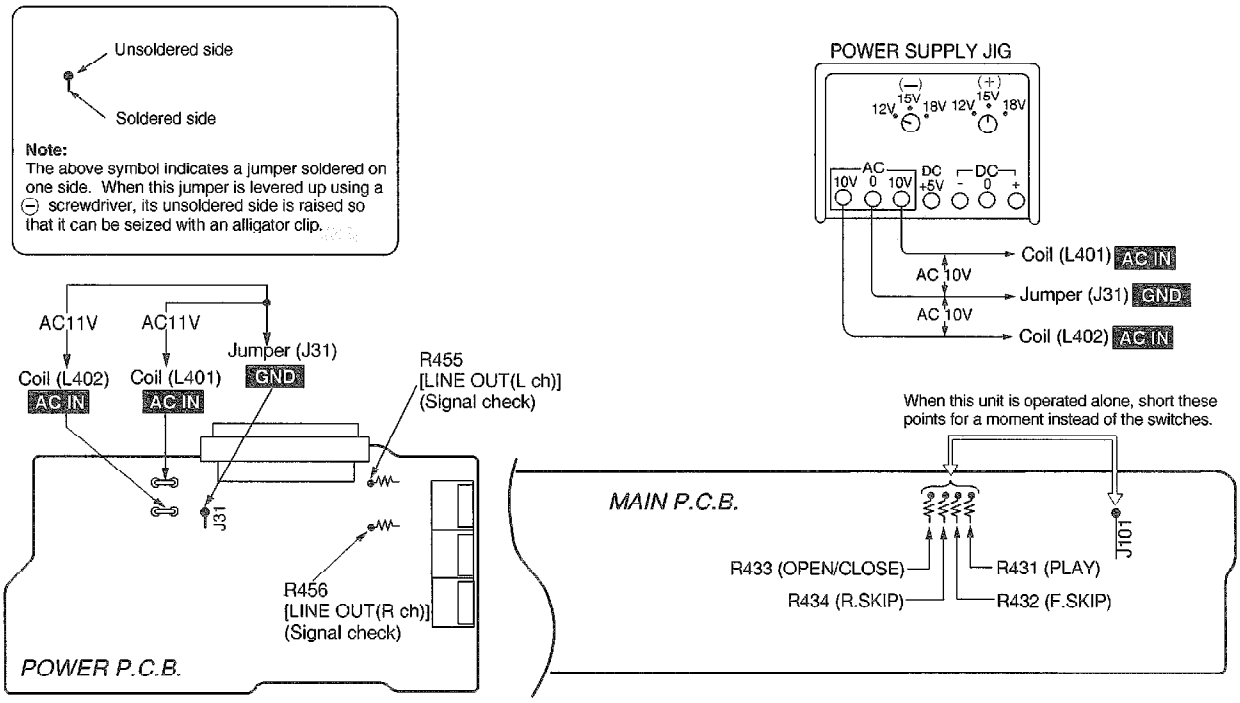
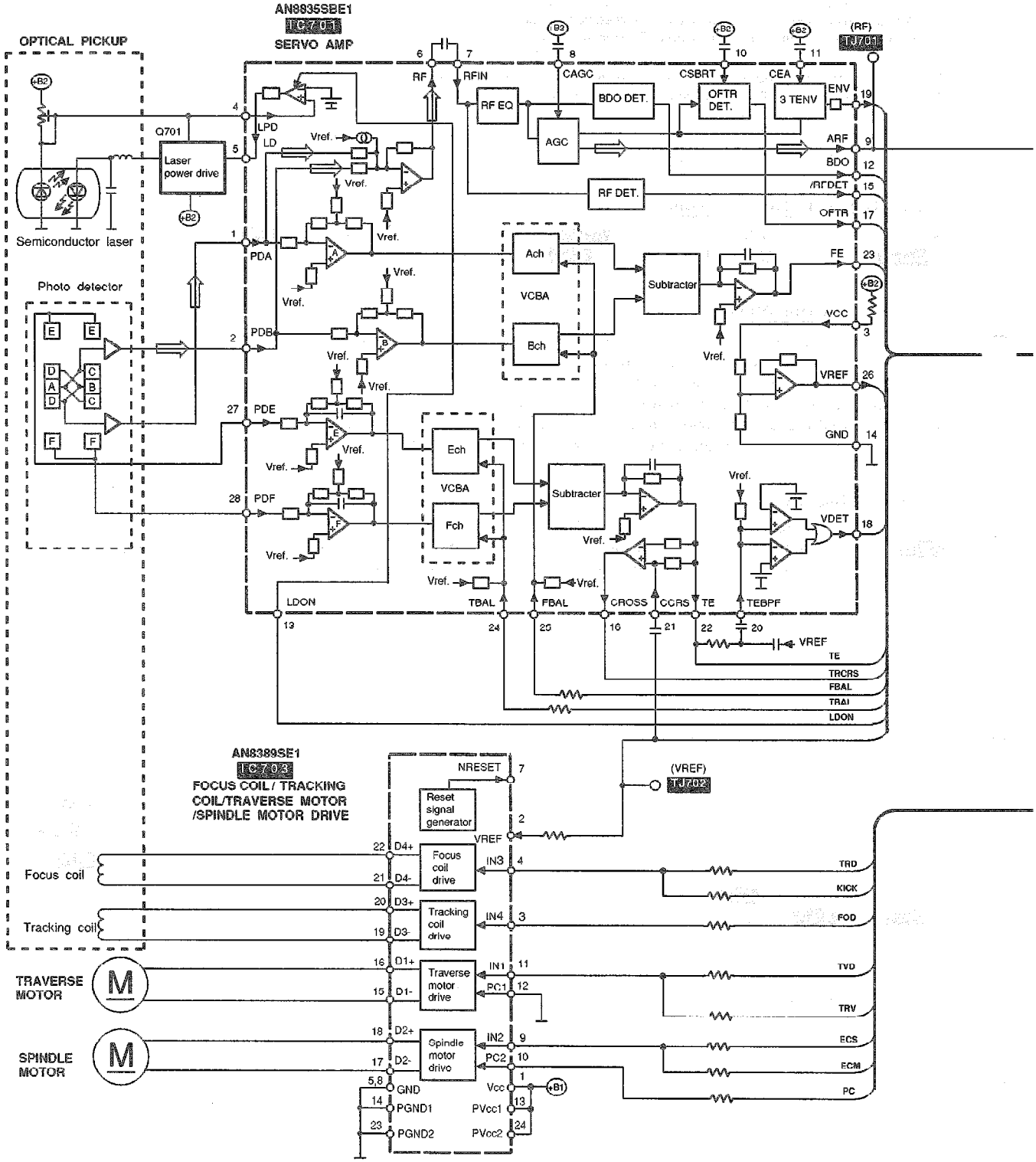
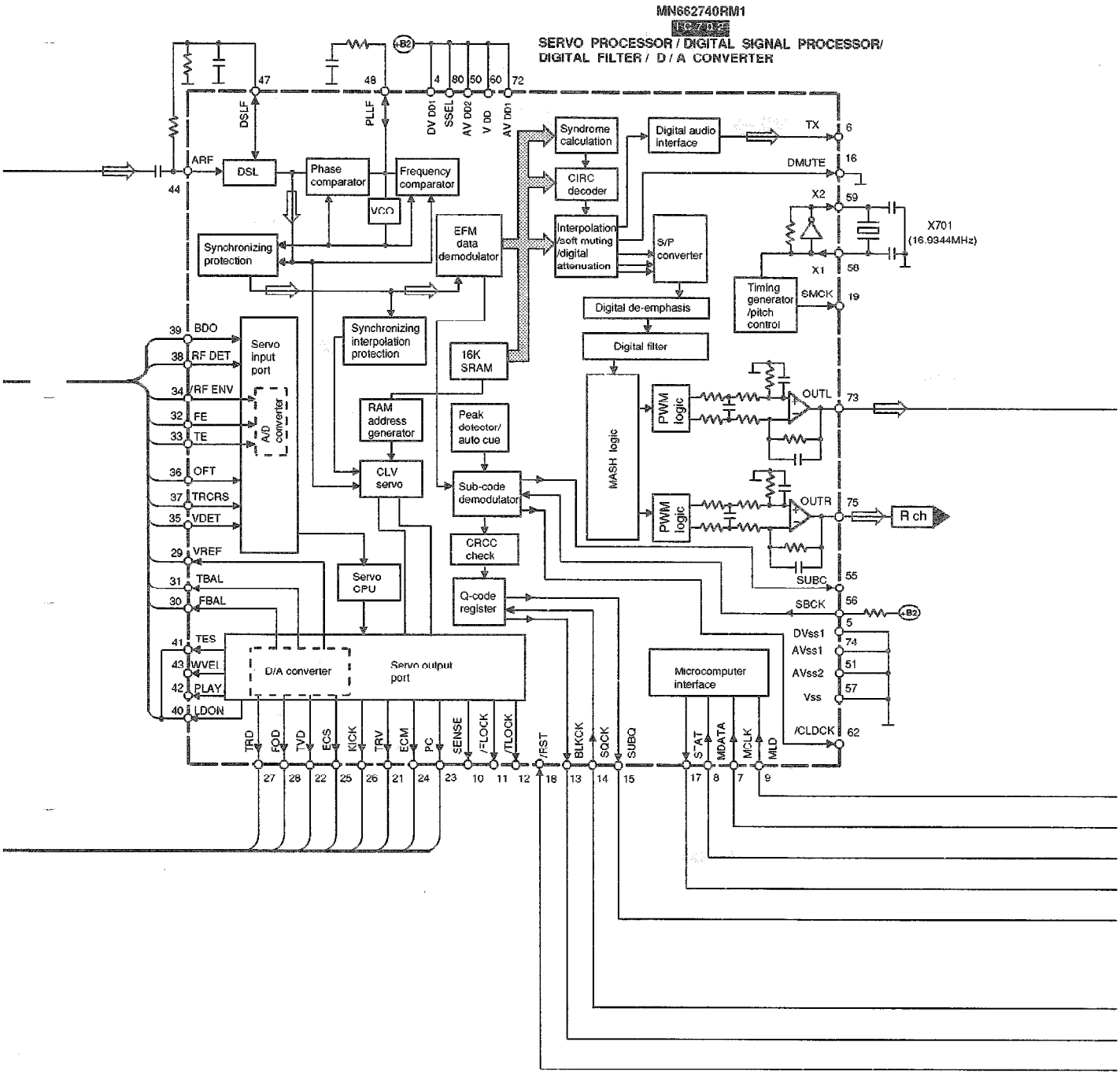


Fig. 1

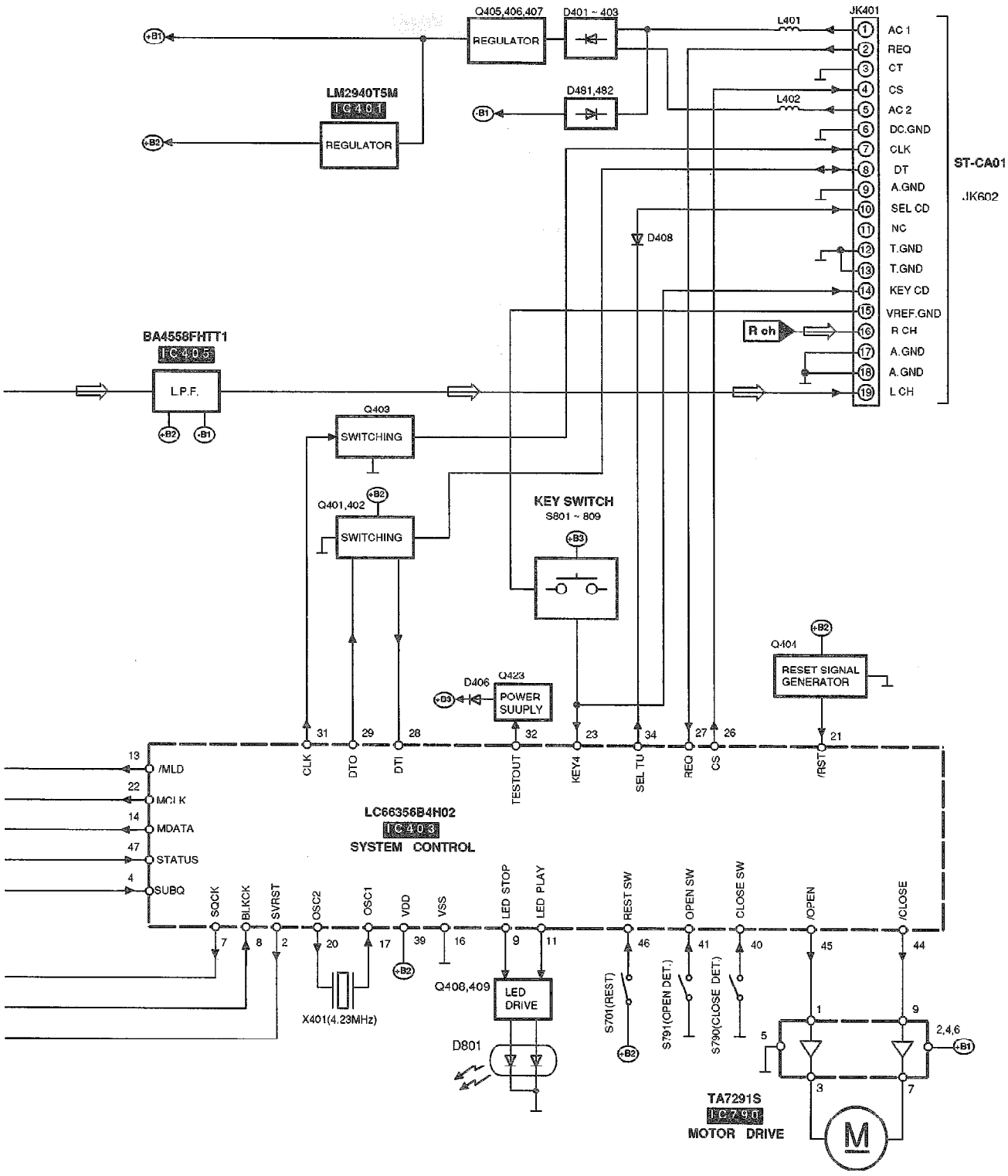
BLOCK DIAGRAM



• Signal line ⇨ : CD signal



● Signal line ⇨: CD signal



SCHEMATIC DIAGRAM (Parts list on pages 29, 30, 33, 34.)

• This schematic diagram may be modified at any time with the development of new technology.

	Page
A SERVO CIRCUIT	18, 19
B LOADING MOTOR CIRCUIT	20
C OPERATION CIRCUIT	20
D MAIN CIRCUIT	20, 21
E POWER SUPPLY CIRCUIT	21

Notes:

- **S701**: Rest detect switch
- **S790**: Tray close detect switch
- **S791**: Tray open detect switch
- **S801**: Disc tray open/close switch (▲OPEN/CLOSE)
- **S802**: Pause switch (▮▮)
- **S803**: F. skip/ search switch (▶▶ / ▶▶|)
- **S804**: Play switch (▷)
- **S805**: Stop switch (□)
- **S806**: R. skip/ search switch (|◀◀ / ◀◀)
- **S807**: Random play switch (RANDOM)
- **S808**: AI edit switch (AI EDIT)
- **S809**: Repeat switch (REPEAT)
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

  No mark: CD STOP
  ( ): CD play [1kHz, L+R, 0dB]

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

- Caution!
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

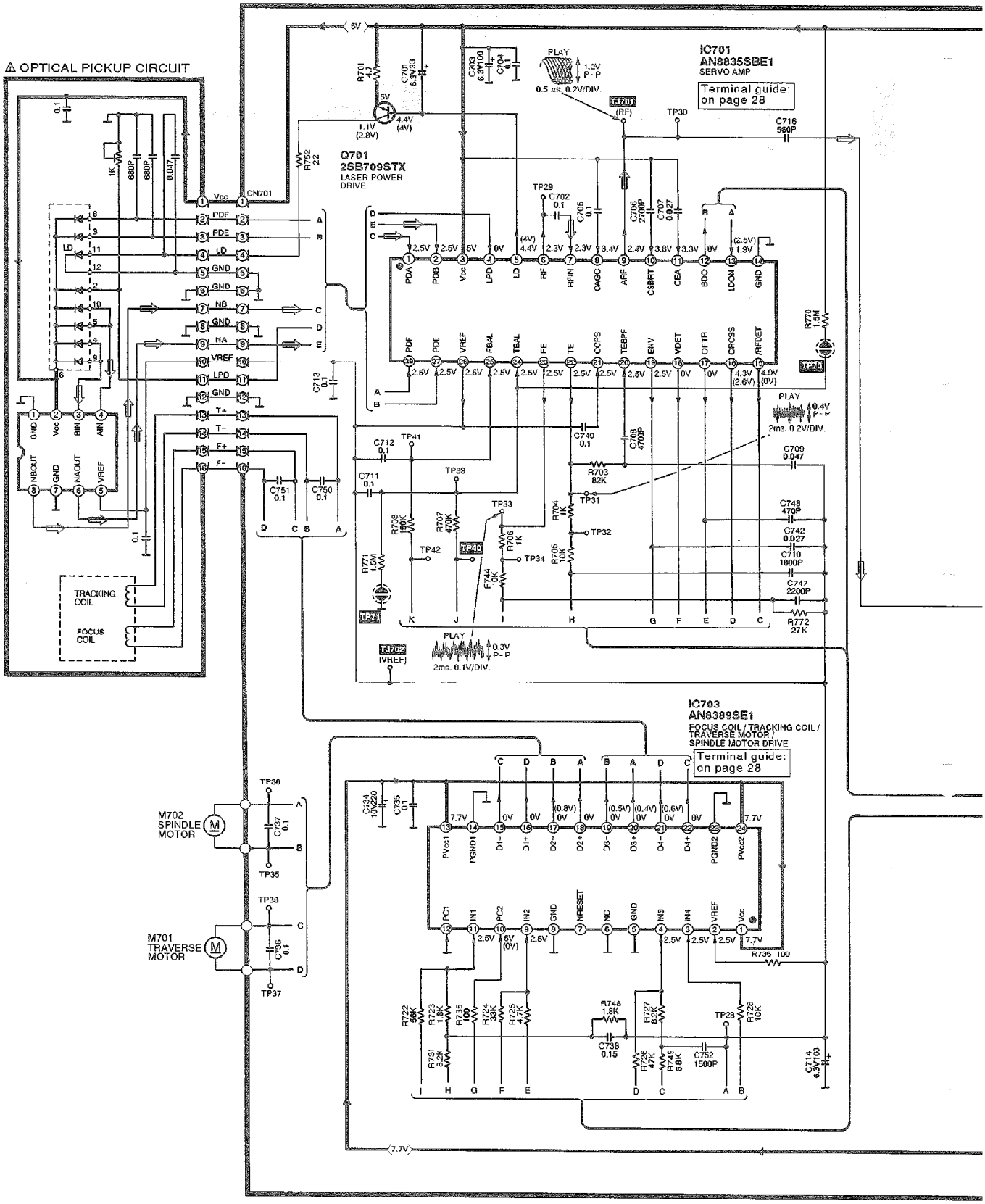
- Voltage and signal line

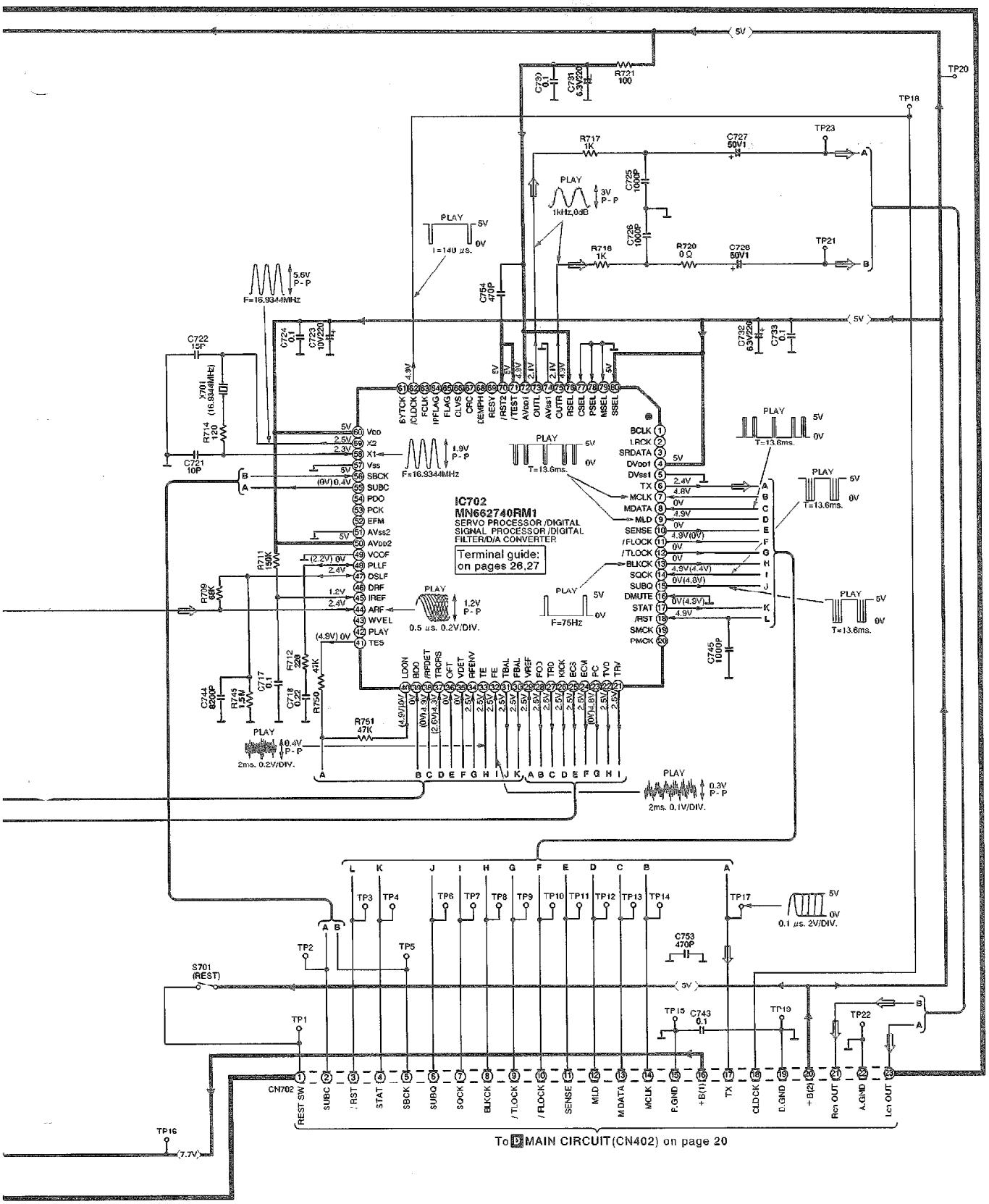
  : Positive voltage line

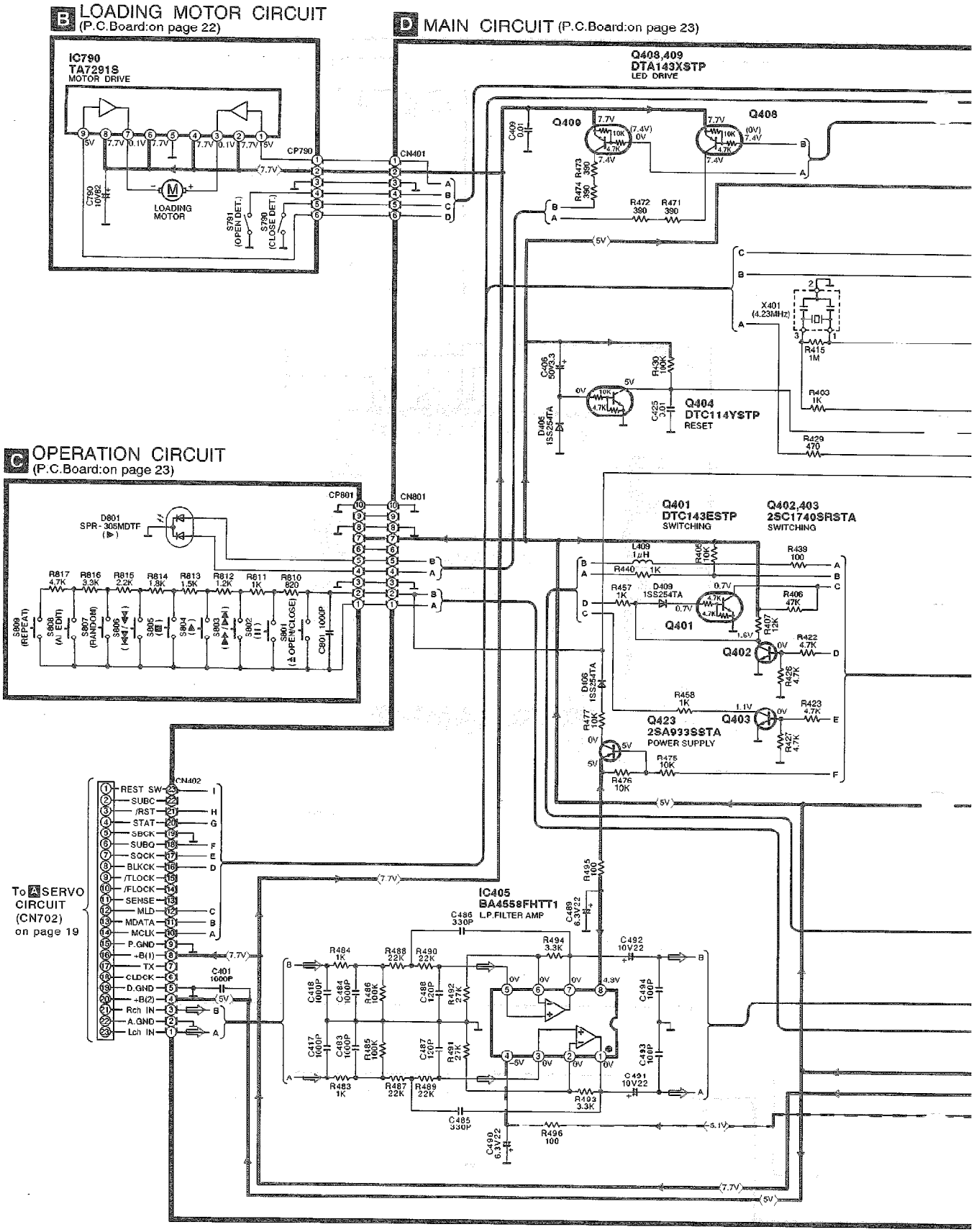
  : Negative voltage line

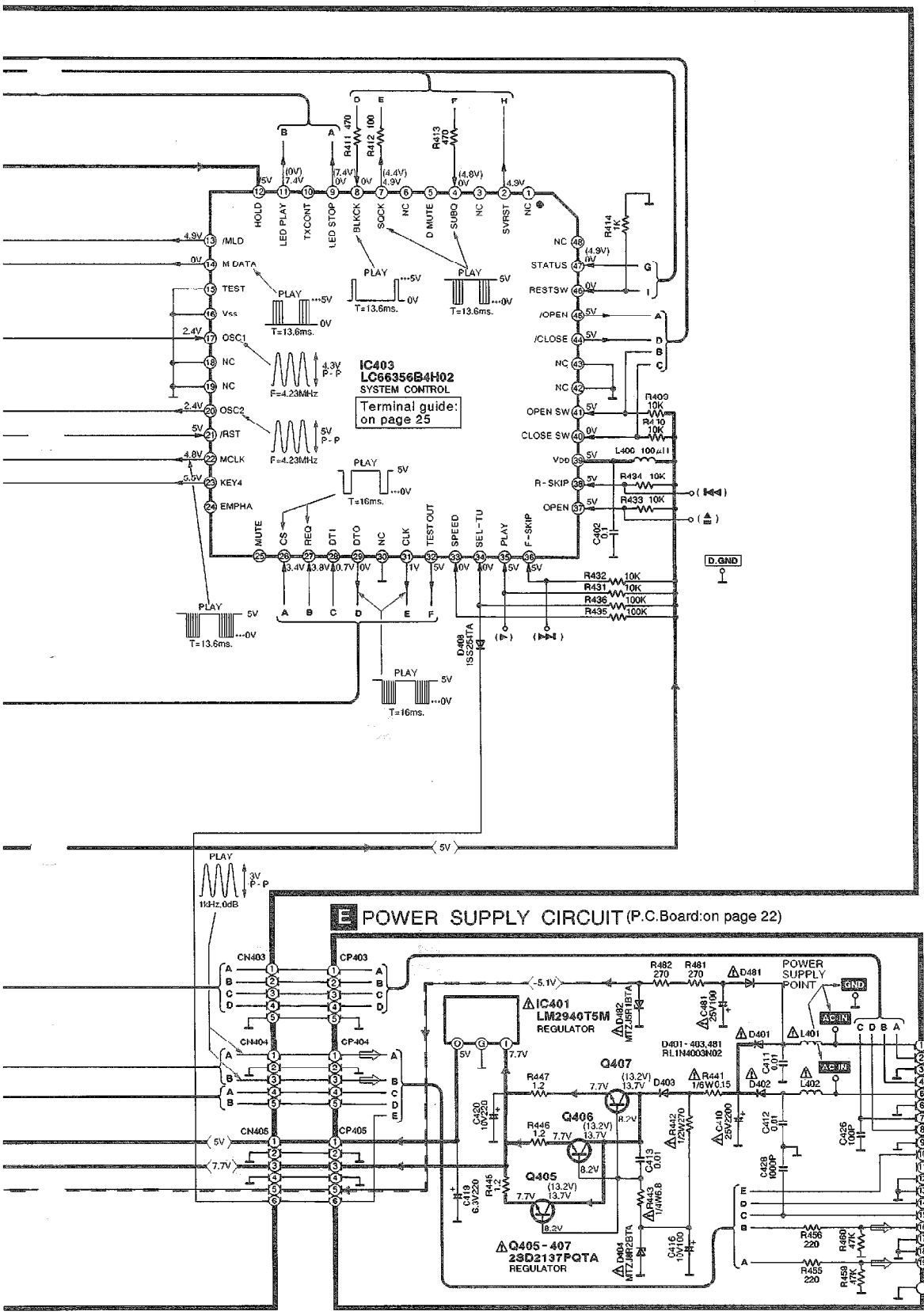
  : CD signal line

A SERVO CIRCUIT (P.C.Board:on page 22)




IC702
MN662740RM1
SERVO PROCESSOR /DIGITAL
SIGNAL PROCESSOR /DIGITAL
FILTER/D/A CONVERTER
Terminal guide:
on pages 26,27
CN702
To D MAIN CIRCUIT(CN402) on page 20

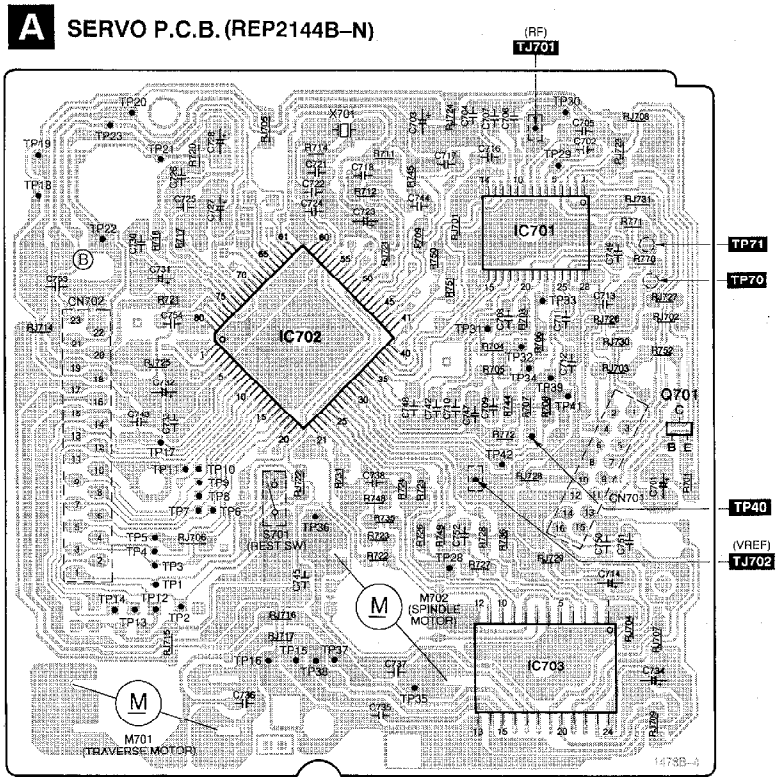

B LOADING MOTOR CIRCUIT
(P.C.Board:on page 22)
IC790
TA7291S
MOTOR DRIVE
LOADING MOTOR
S791 (OPEN DET.)
S790 (CLOSE DET.)
CP790
CN401
D MAIN CIRCUIT (P.C.Board:on page 23)
Q408,409
DTA143XSTP
LED DRIVE
Q409
Q408
X401 (4.23MHz)
Q404
DTC114YSTP
RESET
C OPERATION CIRCUIT
(P.C.Board:on page 23)
CP801
CN801
D801
SPR-305MDTF
Q401
DTC143ESTP
SWITCHING
Q402,403
2SC1740SRSTA
SWITCHING
Q423
2SA933SSTA
POWER SUPPLY
Q403
Q402
IC405
BA4558FHTT1
L.P.FILTER AMP
CN402
REST SW
SUBC
/RST
STAT
SBCK
SUBQ
SQCK
BLKCK
/TLOCK
/FLOCK
SENSE
MLD
MDATA
MCLK
P.GND
+B(1)
TX
CLOCK
D.GND
+B(2)
Rch IN
A.GND
Lch IN
To A SERVO CIRCUIT (CN702) on page 19


IC403
LC66356B4H02
SYSTEM CONTROL
Terminal guide:
on page 25
HOLD
LED PLAY
TXCONT
LED STOP
BLKCK
SOCK
NC
D MUTE
SUBQ
NC
SVRST
NC
/MLD
M DATA
TEST
Vss
OSC1
NC
NC
OSC2
/RST
MCLK
KEY4
EMPHA
STATUS
RESTSW
/OPEN
/CLOSE
NC
NC
OPEN SW
CLOSE SW
Vdd
R-SKIP
OPEN
MUTE
CS
REQ
DTI
DTO
NC
CLK
TESTOUT
SPEED
SEL-TU
PLAY
F-SKIP
R414 1K
R409 10K
R410 10K
L406 100μH
R434 10K
R433 10K
C402 0.1
R432 10K
R431 10K
R436 100K
R435 100K
D468 1SS254TA
D.GND
R411 470
R412 100
R413 470
F=4.23MHz
T=13.6ms.
T=16ms.
1kHz,0dB
POWER SUPPLY CIRCUIT (P.C.Board:on page 22)
CN403
CP403
CN404
CP404
CN405
CP405
IC401
LM2940T5M
REGULATOR
D482 MTZJ5R1BTA
R482 270
R481 270
D481
POWER SUPPLY POINT
GND
AC IN
D401
L401
D402
L402
C411 0.01
C412 0.01
C426 100P
C428 1000P
D401 - 403,481
RL1N4003N02
Q407
Q406
Q405
(13.2V)
13.7V
7.7V
8.2V
R447 1.2
R446 1.2
R445 1.2
R441 1/6W0.15
R442 1/2W270
R443 1/4W6.8
C420 10V220
C419 6.3V220
C413 0.01
C410 25V2200
Q405-407
2SD2137PQTA
REGULATOR
D404 MTZJ6R2BTA
C416 10V100
R456 220
R460 47K
R455 220
R459 47K
JK401
AC1
REQ
CT
CS
AC2
DC.GND
CLK
DT
A.GND
SEL CD
NC
T.GND
T.GND
KEYCD
VREF.GND
Rch
A.GND
A.GND
Lch
E401
To ST-CA01 :JK602 on page 17

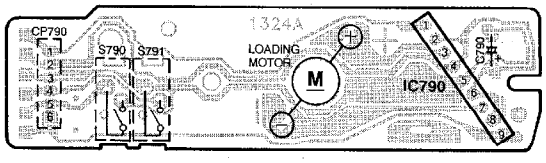
■ PRINTED CIRCUIT BOARD DIAGRAM

• This printed circuit board diagram may be modified at any time with the development of new technology.

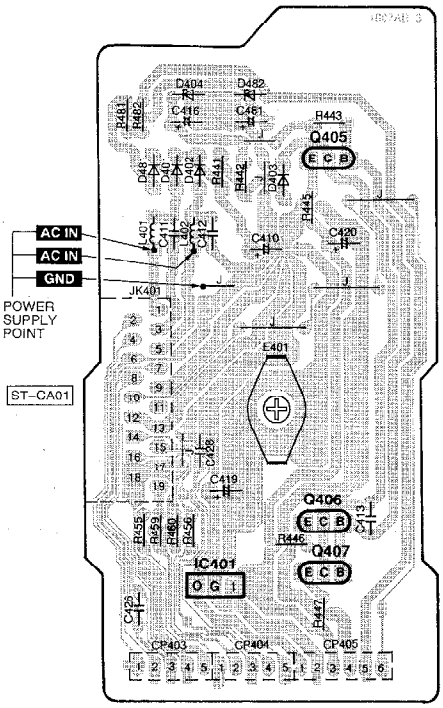
A SERVO P.C.B. (REP2144B–N)



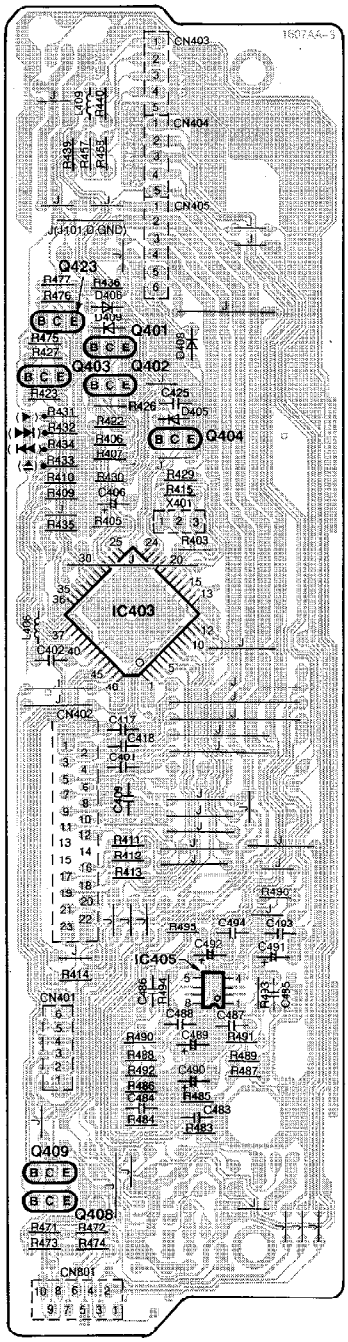
B LOADING MOTOR P.C.B. (REP1960A)



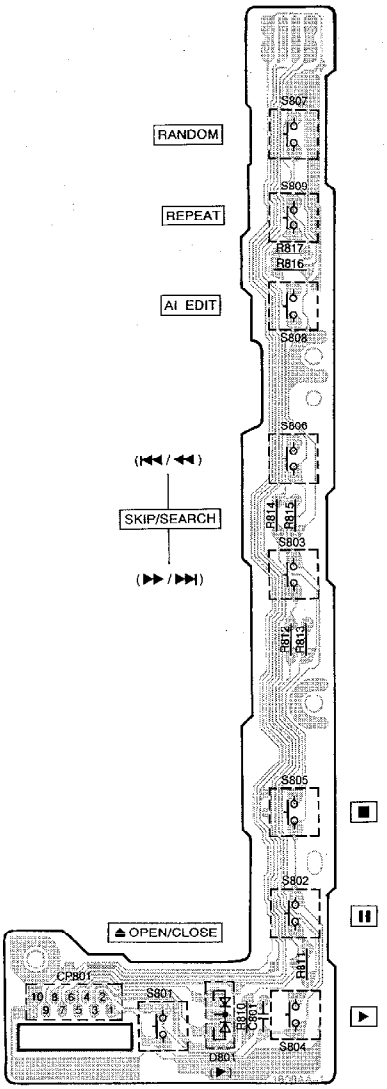
E POWER SUPPLY P.C.B. (REP2269B–M)



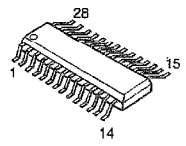
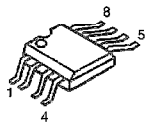
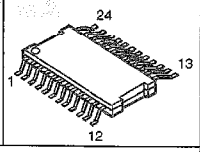
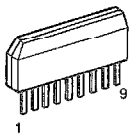
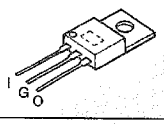
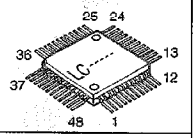
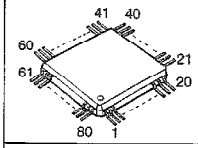
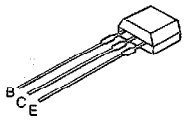
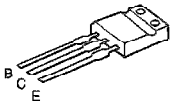
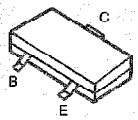
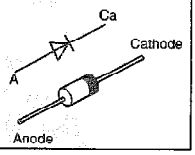
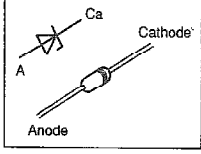
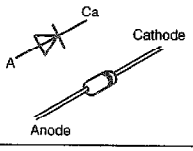
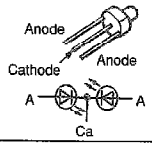
D MAIN P.C.B. (REP2269B–M)



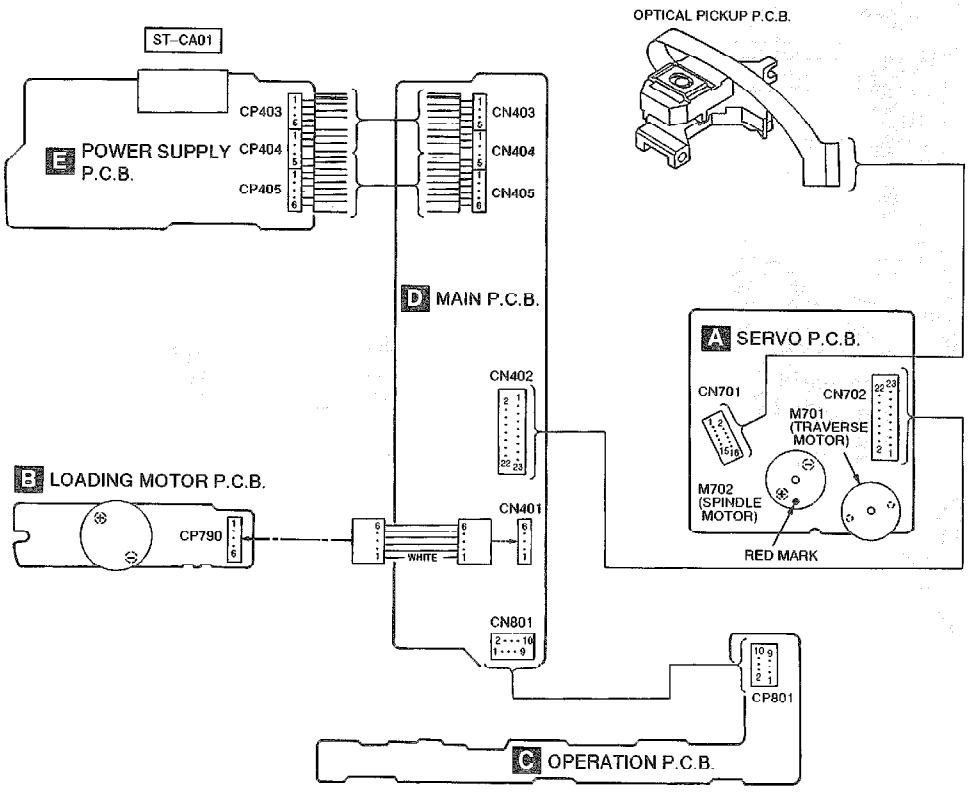
C OPERATION P.C.B. (REP2270B–S)



● Terminal guide of IC's transistors and diodes

AN8835SBE1 	BA4558FHTT1 	AN8389SE1 	TA7291S 	LM2940T5M 	LC66356B4H02 
MN662740RM1 		2SC1740SRSTA 2SA933SSTA DTC114YSTP DTC143ESTP DTA143XSTP 	2SD2137PQTA 	2SB709STX 	RL1N4003N02 
MTZJ5R1BTA MTZJ8R2BTA 	1SS254TA 	SPR-305MDTF 			

■ WIRING CONNECTION DIAGRAM



TERMINAL GUIDE

• IC403 (LC66356B4H02): System Control

Pin No.	Mark	I/O Division	Function
1	NC	—	Not used, open
2	SVRST	O	Reset signal output terminal
3	NC	—	Not used, open
4	SUBQ	I	Sub-code Q data input terminal
5	DMUTE	—	Not used, open
6	NC	—	Not used, open
7	SQCK	O	Sub-code Q registor clock output terminal
8	BLKCK	I	Sub-code block clock input terminal (f=75Hz)
9	LED STOP	O	LED drive signal output terminal
10	TX CONT	—	Not used, open
11	LED PLAY	O	LED drive signal output terminal
12	HOLD	I	Not used, connected to power supply
13	/MLD	O	Command load signal output terminal
14	MDATA	O	Command data signal output terminal
15	TEST	—	Test terminal
16	VSS	—	GND terminal
17	OSC1	I	Crystal OSC terminal (f=4.2336MHz)
18	NC	—	Not used, connected to GND
19	NC	—	
20	OSC2	O	Crystal OSC terminal (f=4.2336MHz)
21	/RST	I	Reset signal input terminal
22	MCLK	O	Command clock signal output terminal
23	KEY4	O	Key switch det. terminal
24	EMPHA	—	Not used, open

Pin No.	Mark	I/O Division	Function
25	MUTE	—	Not used, open
26	CS	I	Communication chip select signal input terminal
27	REQ	I	Communication request signal input terminal
28	DTI	I	Communication data signal input/ output terminal
29	DTO	O	
30	NC	—	Not used, open
31	CLK	O	Communication clock signal output
32	TEST OUT	O	Not used, connected to power supply
33	SPEED	I	Not used, connected to registor
34	SEL-TU	I	Communication data signal input terminal
35	PLAY	I	Not used, connected to registor
36	F-SKIP	I	Not used, connected to registor
37	OPEN	I	Not used, connected to registor
38	R-SKIP	I	Not used, connected to registor
39	VDD	I	Power supply input terminal
40	CLOSE SW	I	Disc tray "CLOSE" det. input terminal
41	OPEN SW	I	Disc tray "OPEN" det. input terminal
42	NC	—	Not used, connected to GND
43	NC	—	Not used, connected to GND
44	/CLOSE	O	Loading motor "CLOSE" signal output terminal
45	/OPEN	O	Loading motor "OPEN" signal output terminal
46	RESTSW	I	Rest position det. input terminal
47	STATUS	I	Status signal input terminal
48	NC	—	Not used, open

● IC702 (MN662740RM1): Servo processor/ digital signal processor/ digital filter/ D/A converter

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Serial bit clock terminal (Not used, open)
2	LRCK	O	L/R discriminating signal (Not used, open)
3	SRDATA	O	Serial data (Not used, open)
4	DVDD1	I	Power supply (digital circuit) terminal
5	DVss 1	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Command clock signal
8	MDATA	I	Command data signal
9	MLD	I	Command load signal ("L":LOAD)
10	SENSE	O	Sense signal (OFT, FESL, NACEND, NAJEND, POSAD, SFG)
11	/FLOCK	O	Optical servo condition (focus) ("L": lead-in)
12	/TLOCK	O	Optical servo condition (tracking) ("L": lead-in)
13	BLKCK	O	Sub-code block clock (f=75Hz) (Not used, open)
14	SQCK	I	Sub-code Q register clock
15	SUBQ	O	Sub-code Q data
16	DMUTE	I	Muting input ("H": MUTE) (Not used, connected to GND)
17	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQCK)
18	/RST	I	Reset signal ("L": reset)
19	SMCK	O	System clock (f=4.2336MHz) (Not used, open)
20	PMCK	O	Frequency division clock signal (No used, open) (f=$\frac{1}{1.92}$x ck=88.2kHz)
21	TRV	O	Traverse servo control

Pin No.	Mark	I/O Division	Function
22	TVD	O	Traverse drive signal
23	PC	O	Turntable motor drive signal ("L": ON)
24	ECM	O	Turntable motor drive signal (Forced mode)
25	ECS	O	Turntable motor drive signal (Servo error signal)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	I	D/A drived output (TVD, ECS, TRD, FOD, FBAL, TBAL) normal voltage input terminal
30	FBAL	O	Focus balance adj. output
31	TBAL	O	Tracking balancef adj. output
32	FE	I	Focus error signal (analog input)
33	TE	I	Tracking error signal (analog input)
34	RFENV	I	RF envelope signal
35	VDET	I	Oscillation det. signal ("H": det.)
36	OFT	I	Off track signal ("H": Off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal ("L": detection)
39	BDO	I	Dropout detection signal ("H": dropout)
40	LDON	O	Laser power control ("H": ON)
41	TES	O	Tracking error shunt output ("H": dropout)
42	PLAY	O	Play signal ("H": play) (Not used, open)

Pin No.	Mark	I/O Division	Function
43	WVEL	O	Double velocity status signal ("H": double) (Not used, open)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias terminal (Not used, open)
47	DSLF	I/O	DSL loop filter terminal
48	PLLF	I/O	PLL loop filter terminal
49	VCOF	I/O	VCO loop filter terminal
50	AVDD2	I	Power supply (analog circuit) terminal(2)
51	AVss2	—	GND (analog circuit) terminal
52	EFM	O	EFM signal (Not used, open)
53	PCK	O	PLL extract clock (f= 4.3218MHz) (Not used, open)
54	PDO	O	Phase comparated signal of EFM and PCK (Not used, open)
55	SUBC	O	Sub-code serial output clock (Not used, open)
56	SBCK	I	Sub-code serial data (Not used, connected to power supply)
57	V ss	—	GND terminal
58	X1	I	Crystal oscillator terminal (f=16.9344MHz)
59	X2	O	
60	VDD	I	Reset signal ("L": reset)
61	BYTCK	O	Byte clock signal (Not used, open)
62	/CLDCK	O	Sub-code frame clock signal (f CLDCK=7.35KHz: Normal) (Not used, open)
63	FCLK	O	Crystal frame clock (Not used, open)
64	IPFLAG	O	Interpolation flag terminal (Not used, open)

Pin No.	Mark	I/O Division	Function
65	FLAG	O	Flag terminal (Not used, open)
66	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo) (Not used, open)
67	CRC	O	Sub-code CRC check terminal ("H": ON, "L": NG) (Not used, open)
68	DEMPH	O	De-emphasis ON signal ("H": ON) (Not used, open)
69	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
70	/RST2	I	Reset terminal after " MASH" circuit (Not used, connected to power supply)
71	/TEST	I	Test terminal (Normal: "H") (Not used, connected to power supply)
72	AVDD1	I	Power supply (analog circuit) terminal (1)
73	OUTL	O	Lch audio signal
74	AV ss1	—	GND (analog circuit) terminal (1)
75	OUTR	O	Rch audio signal
76	RSEL	I	Polarity direction control terminal of RF signal (Not used, connected to power supply
77	CSEL	I	Frequency control terminal of crystal oscillator (Not used, connected to GND)
78	PSEL	I	Test terminal (Normal:"L") (Not used, connected to GND)
79	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336MHz) (Not used, connected to GND)
80	SSEL	I	"SUBQ" terminal mode select ("H": Q code buffer) (Not used, connected to power supply

● IC701 (AN8835SBE1): Servo amp

Pin No.	Mark	I/O Division	Function
1	PDA	I	Focus signal input terminal 1 (Ach)
2	PDB	I	Focus signal input terminal 2 (Bch)
3	VCC	I	Power supply terminal
4	LPD	I	Laser PD signal
5	LD	O	Laser power auto control output
6	RF	O	RF amp terminal
7	RF IN	I	AGC input terminal
8	CAGC	I	AGC detection capacitor input
9	ARF	O	RF signal
10	CSBRT	I	OFTR capacitor connection terminal
11	CEA	I	HPF-AMP capacitor connection terminal
12	BDO	O	Dropout detection control
13	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
14	GND	—	GND terminal

Pin No.	Mark	I/O Division	Function
15	/RFDET	O	RF det. signal ("L": det.)
16	CROSS	O	Tracking error zero cross output
17	OFTR	O	Off track detection ("H": det.)
18	VDET	O	Oscillation det. signal ("H": det.)
19	ENV	O	Envelope output terminal
20	TEBPF	I	Oscillation detect input terminal (Not used, open)
21	CCRS	I	CROSS capacitor connection terminal
22	TE	O	Tracking error signal
23	FE	O	Focusing error signal
24	TBAL	I	Tracking balance adj. input
25	FBAL	I	Focus balance adj. input
26	VREF	O	Reference voltage output
27	PDE	I	Tracking signal input terminal 1 (Ech)
28	PDF	I	Tracking signal input terminal 2 (F ch)

● IC703 (AN8389SE1): Focus coil/tracking coil/traverse motor/spindle motor drive

Pin No.	Mark	I/O Division	Function
1	Vcc	I	Power supply terminal
2	VREF	I	Reference voltage input
3	IN4	I	Motor driver (4) input
4	IN3	I	Motor driver (3) input
5	GND	—	GND terminal
6	NC	—	Not used, connected to GND
7	NRESET	O	Reset terminal (Not used, open)
8	GND	—	GND terminal
9	IN2	I	Motor driver (2) input
10	PC2	I	PC2 (power cut)input
11	IN1	I	Motor driver (1) input
12	PC1	I	PC1 (power cut) input (Not used, connected to GND)

Pin No.	Mark	I/O Division	Function
13	PVcc1	I	Driver power supply (1)
14	PGND1	—	Driver GND terminal (1)
15	D1-	O	Motor driver (1) output terminal (-)
16	D1+	O	Motor driver (1) output terminal (+)
17	D2-	O	Motor driver (2) output terminal (-)
18	D2+	O	Motor driver (2) output terminal (+)
19	D3-	O	Motor driver (3) output terminal (-)
20	D3+	O	Motor driver (3) output terminal (+)
21	D4-	O	Motor driver (4) output terminal (-)
22	D4+	O	Motor driver (4) output terminal (+)
23	PGND2	—	Driver GND terminal (2)
24	PVcc2	I	Driver power supply (2)

RESISTORS AND CAPACITORS

Notes: * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R403	ERDS2TJ102	1/4W 1K
R405	ERDS2TJ103	1/4W 10K
R406	ERDS2TJ473	1/4W 47K
R407	ERDS2TJ123	1/4W 12K
R409, 410	ERDS2TJ103	1/4W 10K
R411	ERDS2TJ471	1/4W 470
R412	ERDS2TJ101	1/4W 100
R413	ERDS2TJ471	1/4W 470
R414	ERDS2TJ102	1/4W 1K
R415	ERDS2TJ105T	1/4W 1M
R422, 423	ERDS2TJ472	1/4W 4.7K
R426, 427	ERDS2TJ472	1/4W 4.7K
R429	ERDS2TJ471	1/4W 470
R430	ERDS2TJ104	1/4W 100K
R431-434	ERDS2TJ103	1/4W 10K
R435, 436	ERDS2TJ104	1/4W 100K
R439	ERDS2TJ101	1/4W 100
R440	ERDS2TJ102	1/4W 1K
R441	ERQ16NKWR15E	1/6W 0.15 ⚠
R442	ERDS1FVJ271T	1/2W 270 ⚠
R443	ERD2FCVJ6R8T	1/4W 6.8 ⚠
R445-447	ERDS2TJ1R2	1/4W 1.2
R455, 456	ERDS2TJ221	1/4W 220
R457, 458	ERDS2TJ102	1/4W 1K
R459, 460	ERDS2TJ473	1/4W 47K
R471-474	ERDS2TJ391	1/4W 390
R475-477	ERDS2TJ103	1/4W 10K
R481, 482	ERDS2TJ271	1/4W 270
R483, 484	ERDS2TJ102	1/4W 1K
R485, 486	ERDS2TJ104	1/4W 100K
R487-490	ERDS2TJ223	1/4W 22K
R491, 492	ERDS2TJ273	1/4W 27K
R493, 494	ERDS2TJ332	1/4W 3.3K
R495, 496	ERDS2TJ101	1/4W 100
R810	ERDS2TJ821	1/4W 820
R811	ERDS2TJ102	1/4W 1K
R812	ERDS2TJ122	1/4W 1.2K
R813	ERDS2TJ152	1/4W 1.5K
R814	ERDS2TJ182	1/4W 1.8K
R815	ERDS2TJ222	1/4W 2.2K
R816	ERDS2TJ332	1/4W 3.3K
R817	ERDS2TJ472	1/4W 4.7K
		CAPACITORS
C401	ECBT1H102KB5	50V 1000P

Ref. No.	Part No.	Values & Remarks
C402	ECBT1H104ZF5	50V 0.1U
C406	RCE1HKS3R3BV	50V 3.3U
C409	ECBT1E103ZF	25V 0.01U
C410	ECA1EM222B	25V 2200 ⚠
C411-413	ECBT1E103ZF	25V 0.01U
C416	RCE1AKA101BG	10V 100U
C417, 418	ECBT1H102KB5	50V 1000P
C419	ECEA0JKA221B	6.3V 220U
C420	ECEA1AKA221B	10V 220U
C425	ECBT1E103ZF	25V 0.01U
C426	ECBT1H101KB5	50V 100P
C428	ECBT1H102KB5	50V 1000P
C481	ECA1EM101B	25V 100U ⚠
C483, 484	ECBT1H102KB5	50V 1000P
C485, 486	ECBT1H331KB5	50V 330P
C487, 488	ECBT1H121KB5	50V 120P
C489, 490	ECEA0JKS220B	6.3V 22U
C491, 492	ECEA1AKA220B	10V 22U
C493, 494	ECBT1H101KB5	50V 100P
C790	ECA1AKF820E	10V 82U
C801	ECBT1H102KB5	50V 1000P
		<SERVO P.C.B.>
		RESISTORS
R701	ERJ6GEYJ4R7V	1/10W 4.7
R703	ERJ6GEYJ823	1/10W 82K
R704	ERJ6GEYJ102A	1/10W 1K
R705	ERJ6GEYJ103V	1/10W 10K
R706	ERJ6GEYJ102A	1/10W 1K
R707	ERJ6GEYJ474V	1/10W 470K
R708	ERJ6GEYJ154V	1/10W 150K
R709	ERJ6GEYJ683V	1/10W 68K
R711	ERJ6GEYJ154V	1/10W 150K
R712	ERJ6GEYJ221V	1/10W 220
R714	ERJ6GEYJ121V	1/10W 120
R717, 718	ERJ6GEYJ102A	1/10W 1K
R720	ERJ6GEY0R00A	1/10W 0.00
R721	ERJ6GEYJ101V	1/10W 100
R722	ERJ6GEYJ563V	/10W 56K
R723	ERJ6GEYJ182V	1/10W 1.8K
R724	ERJ6GEYJ333V	1/10W 33K
R725	ERJ6GEYJ472V	1/10W 4.7K
R726	ERJ6GEYJ473V	1/10W 47K
R727	ERJ6GEYJ822V	1/10W 8.2K
R728	ERJ6GEYJ103V	1/10W 10K
R731	ERJ6GEYJ822V	1/10W 8.2K
R735, 736	ERJ6GEYJ101V	1/10W 100
R744	ERJ6GEYJ103V	1/10W 10K

Ref. No.	Part No.	Values & Remarks
R745	ERJ6GEYJ155V	1/10W 1.5M
R748	ERJ6GEYJ182V	1/10W 1.8K
R749	ERJ6GEYJ682V	1/10W 6.8K
R750, 751	ERJ6GEYJ473V	1/10W 47K
R752	ERJ8GEYJ220V	1/8W 22
R770, 771	ERJ6GEYJ155V	1/10W 1.5M
R772	ERJ6GEYJ273V	1/10W 27K
		CHIP JUMPERS
RJ701-709	ERJ8GEY0R00A	CHIP JUMPER
RJ714-717	ERJ8GEY0R00A	CHIP JUMPER
RJ721-731	ERJ6GEY0R00A	CHIP JUMPER
		CAPACITORS
C701	ECEA0JKA330I	6.3V 33U
C702	ECUZNE104MBN	25V 0.1U
C703	ECEA0JKA101I	6.3V 100U
C704, 705	ECUZNE104MBN	25V 0.1U
C706	ECUV1H272KBN	50V 2700P
C707	ECUV1E273KBN	25V 0.027U
C708	ECUE1H472KBN	50V 4700P
C709	ECUE1C473KBN	16V 0.047U
C710	ECUV1H182KBN	50V 1800P
C711, 712	ECUWNE104ZFN	25V 0.1U
C713	ECUV1C104MBM	16V 0.1U
C714	ECEA0JKA101I	6.3V 100U
C716	ECUE1H561KBN	50V 560P
C717	ECUWNE104ZFN	25V 0.1U
C718	ECUVNC224KBN	16V 0.22U
C721	ECUV1H100DCN	50V 10P
C722	ECUV1H150JCN	50V 15P
C723	ECEA1AKA221I	10V 220U
C724	ECUV1C104MBM	16V 0.1U
C725, 726	ECUE1H102KBN	50V 1000P
C727, 728	ECEA1HPK010I	50V 1U
C730	ECUWNE104ZFN	25V 0.1U
C731, 732	ECEA0JKA221I	6.3V 220U
C733	ECUZNE104MBN	25V 0.1U
C734	ECEA1AKA221I	10V 220U
C735-737	ECUWNE1042FN	25V 0.1U
C738	ECUV1C154KBN	16V 0.15U
C742	ECUV1E273KBN	25V 0.027U
C743	ECUWNE1042FN	25V 0.1U
C744	ECUE1E822KBN	25V 8200P
C745	ECUE1H102KBN	50V 1000P
C747	ECUE1H222KBN	50V 2200P
C748	ECUV1H471KBM	50V 470P

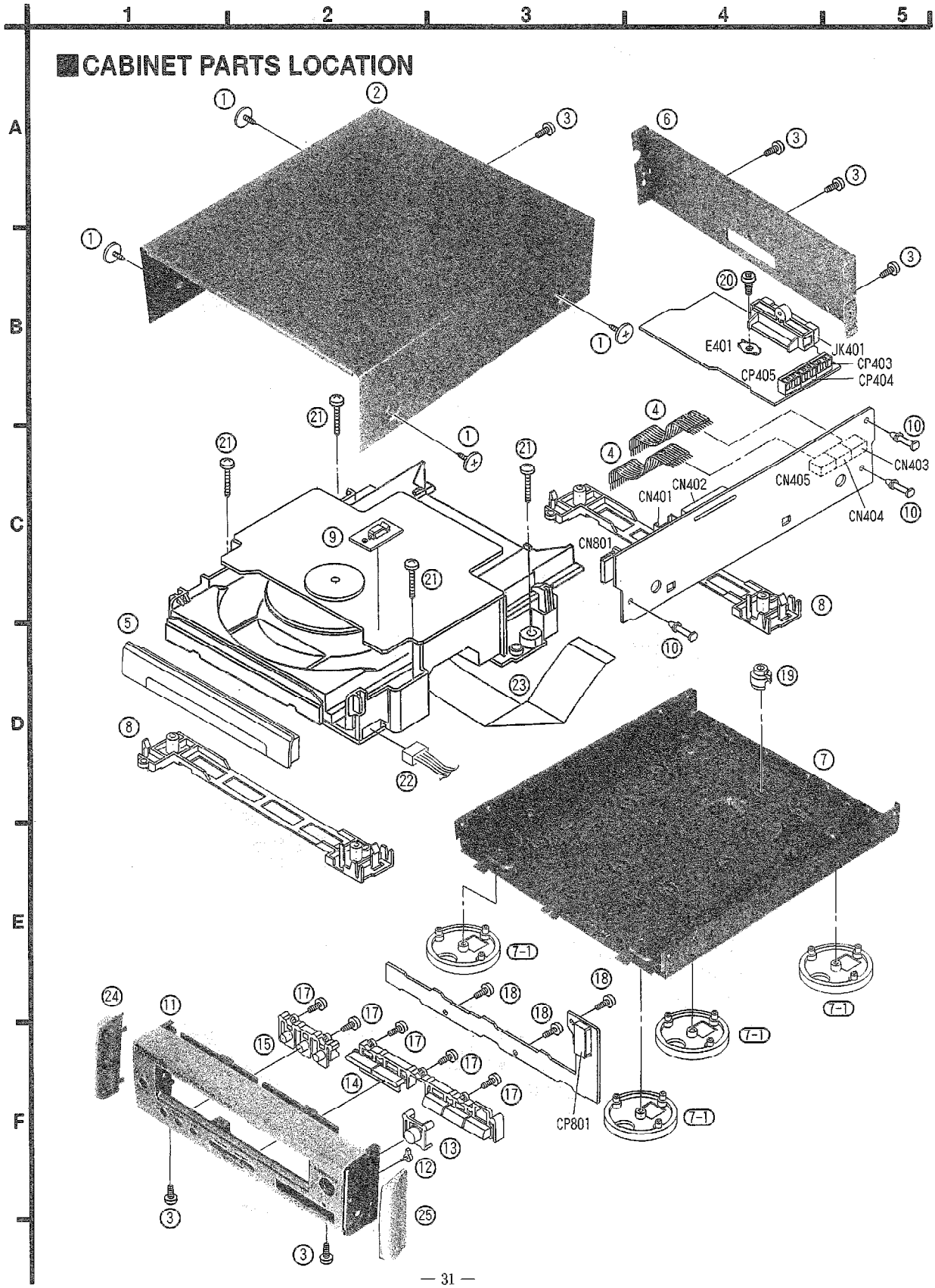
Ref. No.	Part No.	Values & Remarks
C749	ECUZNE104MBN	25V 0.1U
C750	ECUV1C104MBM	16V 0.1U
C751	ECUZNE104MBN	25V 0.1U
C752	ECUE1H152KBN	50V 1500P
C753	ECUV1H471KBM	50V 470P
C754	ECUE1H471KBN	50V 470P

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RHD30007-S	SCREW	
2	RKM0327A-S	CABINET	
3	XTBS3+8JFZ1	SCREW	
4	RWJ1808063XX	FLAT CABLE	
5	RFKNLHD7NA	TRAY ORNAMENT ASS'Y	
6	RGR0243B-A1	BACK PANEL	
7	RFKJLHD7-N	BOTTOM CHASSIS ASS'Y	
7-1	RKA0076-N1	FOOT	
8	RMN0382	MECHA SPACER	
9	RMR0483	FLAT CABLE CLIP	
10	RMR0502	SPACER	

Ref. No.	Part No.	Part Name & Description	Remarks
11	RFKGLCA01E-N	FRONT PANEL ASS'Y	
12	RGL0335-1Q	LED CONDUCTIVE CHIP	
13	RFKNLHD7NB	OPEN/CLOSE BUTTON ASS'Y	
14	RFKNLHD7NC	PLAY/STOP BUTTON ASS'Y	
15	RFKNLHD7ND	RAN./REP./AI BUTTON ASS'Y	
17	XQN26+AJ6FZ	SCREW	
18	XTBS26+8J	SCREW	
19	SHE170-2	P.C.B.SUPPORT	
20	XTB3+12JFZ	SCREW	
21	XTB3+18JFZ	SCREW	
22	REX0510	CONNECTOR ASS'Y	
23	RE20887	FFC(23P)	
24	RGK0821-S	SIDE ORNAMENT(L)	
25	RGK0822-S	SIDE ORNAMENT(R)	

■CABINET PARTS LOCATION

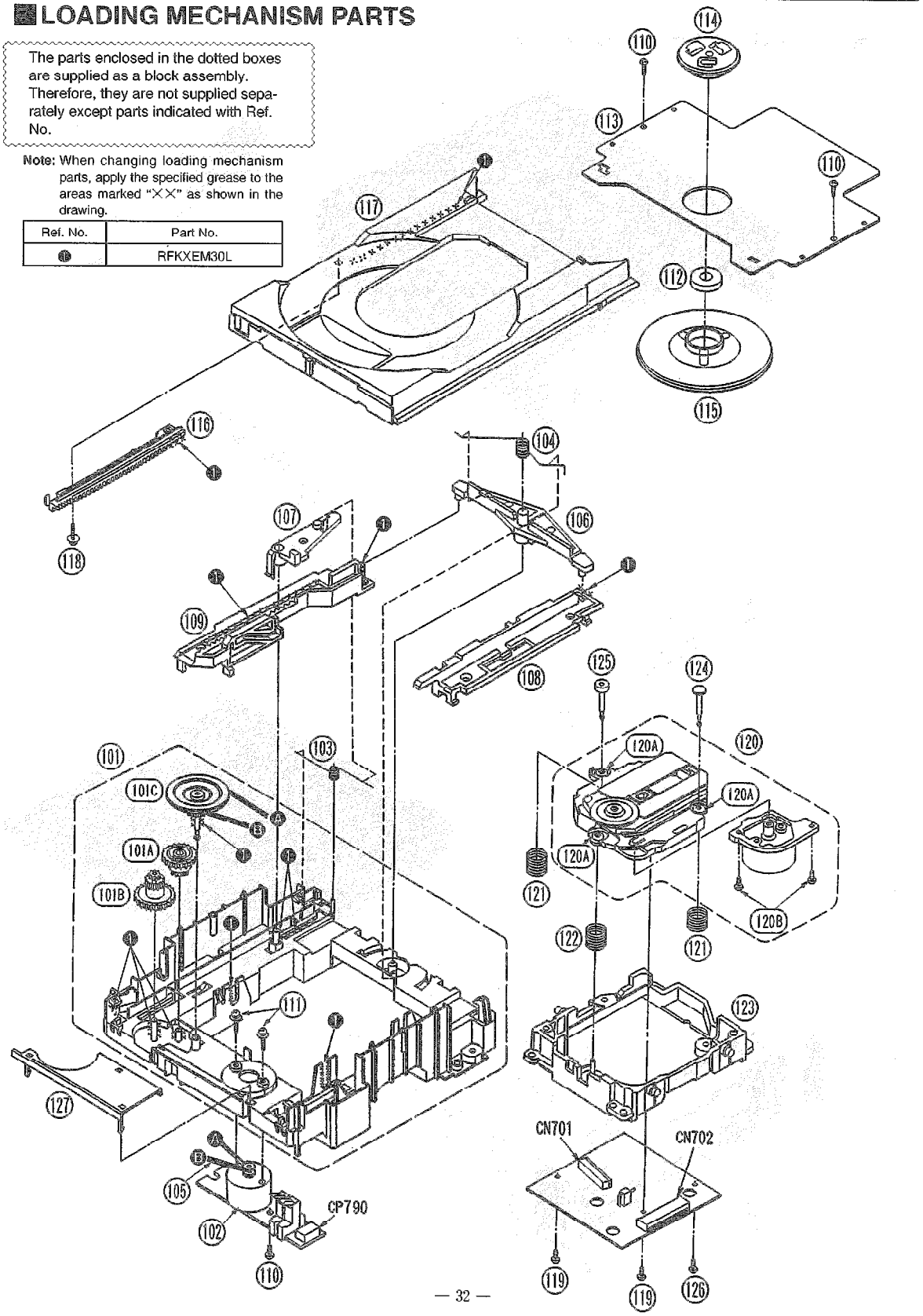


LOADING MECHANISM PARTS

The parts enclosed in the dotted boxes are supplied as a block assembly. Therefore, they are not supplied separately except parts indicated with Ref. No.

Note: When changing loading mechanism parts, apply the specified grease to the areas marked "XX" as shown in the drawing.

Ref. No.	Part No.
ⓕ	RFKXEM30L



REPLACEMENT PARTS LIST

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* Warning: This product uses a laser diode. Refer to caution statements on page 2.
* [M] indicates in Remarks columns parts that are supplied by MESA.
* ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Part Name & Description	Remarks
		LOADING MECHANISM	
101	RFKJXDT07-K	LOADING MECH CHASSIS ASS'Y	
101A	RDG0142	INTERMEDIATE GEAR	
101B	RDG0193	DRIVE GEAR(A) ASS'Y	
101C	RDP0065	INTERMEDIATE PULLEY	
102	REM0019	LOADING MOTOR ASS'Y	
103	RME0063	LOCK LEVER SPRING	
104	RME0087	ASSIST SPRING	
105	RMG0158	BELT	
106	RML0349	CONVERSION LEVER	
107	RML0178-1	LOCK LEVER	
108	RMM0059-1	SLIDE PLATE(1)	
109	RMM0079-1	SLIDE PLATE(2)	
110	XTN26+6G	SCREW	
111	XYN2+F6FZ	SCREW	
112	RMM245ZA	MAGNET	[M]
113	RFKNLCH530EA	CLAMP PLATE ASS'Y	
114	RMR0334	FIXED PLATE	[M]
115	RXQ0380	MAGNET HOLDER ASS'Y	
116	RFKNLPG440-K	DRIVE GEAR(B) ASS'Y	
117	RGQ0144-K	DISC TRAY	
118	RHD20009-1	SCREW	
119	XTV2+6G	SCREW	
120	RAE0150Z	TRAVERSE DECK ASS'Y	
120A	SHGD113-1	FLOATING RUBBER	
120B	SNSD38	SCREW	
121	RME0109	FLOATING SPRING(1)	
122	RME0142	FLOATING SPRING(2)	
123	RMR0698-K	TRAVERSE CHASSIS	
124	RMS0123-1	TRAVERSE FIXED PIN(1)	
125	RMS0350	TRAVERSE FIXED PIN(2)	
126	XTN2+6G	SCREW	
127	RMK0255	BELT COVER	
		INTEGRATED CIRCUIT(S)	
IC401	LM2940T5	REGULATOR	⚠
IC403	LC66356B4H02	SYSTEM CONTROL	
IC405	BA4558FHT1	L.P.F.AMP	
IC790	TA7291S	MOTOR DRIVE	
		TRANSISTOR(S)	
Q401	DTC143ESTP	TRANSISTOR	
Q402, 403	2SC1740SRSTA	TRANSISTOR	
Q404	DTC114YSTP	TRANSISTOR	
Q405-407	2SD2137PQTA	TRANSISTOR	⚠
Q408, 409	DTA143XSTP	TRANSISTOR	
Q423	2SA933SSTA	TRANSISTOR	
		DIODE(S)	
D401, 402	RL1N4003N02	DIODE	⚠
D403	RL1N4003N02	DIODE	
D404	MTZJ8R2BTA	DIODE	⚠[M]
D405, 406	1SS254TA	DIODE	
D408, 409	1SS254TA	DIODE	
D481	RL1N4003N02	DIODE	⚠
D482	MTZJ5R1BTA	DIODE	⚠
D801	SPR-305MDTF	L.E.D.	
		COIL(S)	
L401, 402	BL02RN2R65T2	COIL	⚠
L406	ELEXT101KA9	COIL	
L409	ELEXT1R0KA9	COIL	
		OSCILLATOR(S)	
X401	EFOEC4234T3	OSCILLATOR(4.23 MHz)	
		SWITCH(ES)	
S790	RSH1A005	CD TRAY CLOSE	
S791	RSH1A005	CD TRAY OPEN	
S801	EVQ21405R	OPEN/CLOSE	
S802	EVQ21405R	PAUSE	
S803	EVQ21405R	F.SKIP/SEARCH	
S804	EVQ21405R	PLAY	
S805	EVQ21405R	STOP	
S806	EVQ21405R	R.SKIP/SEARCH	
S807	EVQ21405R	RANDOM	
S808	EVQ21405R	AI EDIT	
S809	EVQ21405R	REPEAT	
		CONNECTOR(S) AND SOCKET(S)	
CN401	RJP6G17ZA	CONNECTOR(6P)	
CN402	RJS1A6223-1	CONNECTOR(23P)	
CN403, 404	RJS1A6605	CONNECTOR(5P)	

Ref. No.	Part No.	Part Name & Description	Remarks
CN405	RJS1A6606	CONNECTOR (6P)	
CN801	RJU099W10	SOCKET (10P)	
CP403, 404	RJS1A6605	CONNECTOR (5P)	
CP405	RJS1A6606	CONNECTOR (6P)	
CP790	RJP6G17ZA	CONNECTOR (6P)	
CP801	RJT099W10-1	CONNECTOR (10P)	
JK401	RJT065K19	CONNECTOR (19P)	
		EARTH PLATE (S)	
E401	SNE1004-2	EARTH PLATE	
		<SERVO P. C. B.>	
		INTEGRATED CIRCUIT (S)	
IC701	AN8835SBE1	SERVO AMP	
IC702	MN662740RM1	SERVO PROCESSOR	
IC703	AN8389SE1	COIL & MOTOR DRIVE	
		TRANSISTOR (S)	
Q701	2SB709S	TRANSISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
		OSCILLATOR (S)	
X701	RSXB16M9J02T	OSCILLATOR (16. 9344MHz)	
		SWITCH (ES)	
S701	RSM0006-P	REST DETECTOR	
		CONNECTOR (S) AND SOCKET (S)	
CN701	RJU035T016-1	SOCKET (16P)	
CN702	RJS1A6723-1Q	CONNECTOR (23P)	
		<GREASE OR JIG/TOOL>	
		TEST DISC	
SA1	SZZP1054C	PLAYABILTY TEST DISC	
		GREASE	
SA2	RFKXEM30L	MOLYCOAT GREASE EM30L	

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